





# User confrontation is avoided by NCR

by Keith Jones  
NCR EXECUTIVES attending the annual meeting of the NCR Computer Users' Association last week were no doubt relieved to hear that the association anticipated no major confrontations with their supplier this year. But the meeting was not without some criticism of NCR's product and marketing policies.

NCUA chairman Derek Williams referred to "slight dissatisfaction" among users about gaps in NCR's software offerings, in particular database and word processing software for the 8250, the smallest NCR machine qualifying users for NCUA membership.

Stronger feelings were expressed by a user of two 8250s who was having to pay two lots of licence charges on some NCR menu software even though he used it on only one machine. NCR's director of marketing, Graham Miller, agreed to "look into" that problem, but he was not prepared to make any concessions to users who were paying twice for software that they used on two machines.

This interchange resurrected what NCR describes as its "intellectual properties" policy which involves the separate pricing of software on a per machine basis rather than per site. The policy has been a cause of argument between

NCR and its users in the past.

There was also some discussion of the central software support telephone service inaugurated last year by NCR with the intention of speeding up the servicing of software queries from users all over the UK. Records of the software used at each site are being set up on an 8250 system in London and many users in the North are still waiting for their details to be added.

One Northern user at the meeting complained about the delay and was promised by Graham Miller that the service would be available to him within six weeks.

## UK launch of multi-processor system

by Rory Johnston  
A MULTI-PROCESSOR small business computer system has been launched in the UK by Management Assistance Inc (MAI) as a successor to its Basic Four cluster product. Word processing, data processing, or a mixture of the two are provided for by different types of terminals, each with its own micro, connected to a central file

processor.

The product was originally known in the US, where it was launched last autumn, as the Spectrum 80, but the name has now been changed to MAI 80. The central file processor which every system requires includes 2 Mbytes of fixed disc and 1.2 Mbytes of floppy disc. This can support up to four workstations, three printers,

and a further 17 bytes of fixed disc.

The word processing on the MAI 80 is the same as that already available on the Basic Four - the package known as Datawrite. An earlier venture by MAI into shared logic word processing, called Wordstream, was closed down last summer after heavy losses.



Brian Lamb, managing director of Baker Electronics, introduces the 8400 series brief-case micro.

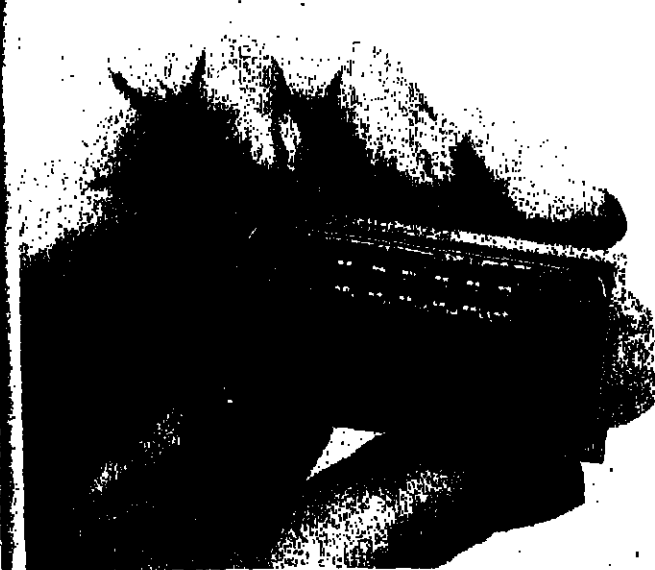
## Brief-case micro launched at last

by Kevin Cahill  
BAKER ELECTRONICS, a Middlesex-based peripheral supplier, has finally launched its 8400 series "brief-case" microcomputer.

The launch last week was seven months late due to difficulties in producing the packed components for the RAM machine. Supplier problems had produced interference with each other and the company eventually wrote off £49,000 of additional development expense.

The Z80-based machine, complete with 92K of bubble memory and 64K of memory, weighs 17lbs and works stably at its launch. The gas plasma display shows 480 characters in 11 rows of 40 columns.

Although the acoustic coupling supplied with the 8400 has not been approved by the Post Office, approval is expected shortly. This will enable the machine to be used as a remote intelligent terminal. The machine, according to Baker, will sell for about £3,500.



The dongle, the protection device which has done wonders for Dataview's Wordpak package.

## US is receptive to UK microsoftware marketing techniques

by Chris Gooding  
THE potential for selling in the US is such that I can't walk away from it, Paul Handover, of software supplier Dataview, told Computer Weekly last week after returning from a trip on which he was surprised to find a large market which might be tapped by UK sales methods.

Dataview is heading for about £700,000 turnover this year with highly successful Wordcraft package, whose sales have been helped along by the controversial addition of a hardware protection device called the dongle.

Individual dongle in order to function, and it prevents unauthorized copies being made. Handover, who describes himself as "a trusting fellow at heart", admits having to protect his product in this way, especially as the dongle is the single most expensive component in the package, but admits that sales have shot up since its addition.

About 13% of Dataview's £44,000 profit in 1980 came from exports to the US and Europe and now Handover is talking about setting up a sales outlet in the US to bring British selling methods to the microcomputer business market.

The small business market is enormous there, but most dealers

rely on 'walk-in' interest. Dealers in the US were very interested in our methods of selling on site, going in with demonstrations of what the system can do for users. "We are used to selling to professional buyers, whereas in the US the dealers seem to sit and wait for interested individuals to come to them," Handover added.

Dataview's customers already include such names as ICI, the MoD, the Post Office, and May and Baker.



Paul Handover, of Dataview, is planning to try out British selling techniques on an untapped US market.

## Cullinane claims 90% productivity boost

His database specialist Cullinane Database Systems has joined the race to supply programmer productivity tools with the release of its Application Development

Package. Cullinane describes ADS/Batch as a totally integrated application development system that increases programmer productivity by up to 90% over conventional programming languages.

The package uses Cullinane's proprietary Data Dictionary as its base point, so that file formats become a central resource and updates to the database automatically propagate without lengthy manual modifications.

The technique, says Cullinane, has standardized routines and checking, issues that maintenance programming becomes easier.

Cullinane Corp has recently changed its name to Cullinane Database Systems to emphasize its commitment to the DMS product range, and its investment in market research and development has begun to bear fruit.

Charles Bachman, database designer and pioneer, has just become Cullinane's vice-president.

Less than a year ago, Apple's chief executive had been

needed only the logic required for special processing, since editing, validation and other routine operations on data are handled by the dictionary.

A high level language is provided with the system for the logic programming. According to Vic Morris, Cullinane's UK manager, it is based around the Data Manipulation Language, giving additional procedures to define updates.

Cullinane Corp has recently changed its name to Cullinane Database Systems to emphasize its commitment to the DMS product range, and its investment in market research and development has begun to bear fruit.

Charles Bachman, database designer and pioneer, has just become Cullinane's vice-president.

Less than a year ago, Apple's chief executive had been

needed only the logic required for special processing, since editing, validation and other routine operations on data are handled by the dictionary.

A high level language is provided with the system for the logic programming. According to Vic Morris, Cullinane's UK manager, it is based around the Data Manipulation Language, giving additional procedures to define updates.

Apple's chief executive had been

# IBM likely to choose Matsushita components for move into micros

by Kevin Cahill  
SPECULATION continues that IBM will link up with Japanese manufacturer Matsushita and make its long-anticipated move into the micro market.

Though a deal by which the US company sells Matsushita machines under the IBM name is not ruled out, the likeliest link-up is for IBM to buy Japanese components.

Manufacture of micros aimed at four distinct markets seems likely to centre on Raleigh, North Carolina, where IBM already makes a wide range of peripherals and modems.

The president of IBM Japan, Takeo Shiina, has been quoted in the Japanese press as saying that a link between the two companies may be limited to an exchange of components. Matsushita fuelled rumours several weeks ago by confirming that it was having discussions with IBM.

An alternative would be for IBM to forge a marketing link in the same way as it has done with Minolta, the Japanese manufacturer of photocopiers, which are also sold under the IBM label. This allows IBM a breathing space to develop its own advanced product.

According to US reports, IBM

has divided the micro market into four segments: small business, in which typical prices are between \$1,500 and \$8,000 and in which IBM estimates about 5% of the US market has been tapped; users within large organisations, often independent of existing DP facilities, in which typical prices are between \$800 and \$10,000 and of which only 2% of the market is taken up; personal systems for the computer enthusiasts, with prices down to \$200 (under £90) where perhaps one third of the market has been tapped; and home systems for games, shopping at home etc, where prices are between \$250 and \$1,500 and where only 1% of market needs are met.

Speculation has it that IBM will aim at the last sector, feeling that its potential is not properly met by existing manufacturers.

An IBM system selling at between \$500 and \$900 including printer is thought possible for this.

Matsushita currently has three separate microcomputer operations. Its electronics division produces machines for OEM sale, its communications division markets a personal machine, and it sells a machine under a different label through a joint operation with Fujitsu.

According to a DoI spokesman the seminar came at a bad time, when most people concerned were

tied up at other electronics conferences and exhibitions.

The organisers hope to hold the event in the autumn when they expect the sudden surge in electronics events to have died down. The seminar is specifically aimed at consultants from the electronics industry particularly concerned with the government's MAP (Microprocessor Applications Project) scheme.

when most people concerned were

tied up at other electronics conferences and exhibitions.

The organisers hope to hold the event in the autumn when they expect the sudden surge in electronics events to have died down. The seminar is specifically aimed at consultants from the electronics industry particularly concerned with the government's MAP (Microprocessor Applications Project) scheme.

when most people concerned were

## £200,000 grant for robotics

by Chris Youett  
SCIENTISTS at Warwick University have been given a £200,000 grant over three years to develop a robot that can be used in hazardous environments such as nuclear plants.

The grant was made by the Science Research Council to a team led by Dr Mike Larcombe, said to be the country's leading expert on mobile robots. His team

is also developing a control system for automatic industrial electric powered vehicles. This is being carried out in conjunction with forklift truck maker Lansing Bagnall.

The aim of the group is to use microprocessors and sensory instruments which will allow the trucks to detect and respond to their environment while carrying out routine tasks.

## DoI event came at bad time

by Eileen Stainer  
THE one-day seminar on custom integrated circuits, organised by the Department of Industry and the Electronics Components Industry Federation, which was planned for earlier this week was cancelled owing to lack of response.

According to a DoI spokesman the seminar came at a bad time, when most people concerned were

# Full-duplex 2400-bps operation - on just one telephone line.

The Codex LS1 24/24 Data Modem. It gives you full EIA RS-232-C/CCITT V.24 compatibility plus. A high speed modem utilizing the latest MOS/LSI data communications technology, it processes synchronous binary serial data at an 800-baud audio signalling rate over a standard dial network or private 2-wire voice band. Operation is full-duplex. So, like everything Codex, it lives up to spec. And more. Check these features:

- Data rate selectable from the nominal 2400 bps for average quality lines, to a fall-forward rate of 3200 bps for high quality lines, and a fall-back rate of 1600 bps for poorer lines.
- Automatic or manual answer.
- Optional asynchronous operating mode.
- Domestic and international dial line interfacing.

For full details please use the coupon. Or your telephone. So, like everything Codex, it lives up to spec. And more. Check these features:

- Data rate selectable from the nominal 2400 bps for average quality lines, to a fall-forward rate of 3200 bps for high quality lines, and a fall-back rate of 1600 bps for poorer lines.
- Automatic or manual answer.
- Optional asynchronous operating mode.
- Domestic and international dial line interfacing.

**CODEX**  
WE'LL GET YOU THROUGH  
Codex (UK) Limited is a subsidiary of  
MOTOROLA LTD.  
To Codex (UK) Limited, 106 Lansdowne Road, Groudon, CR0 2BN. Telephone 01-680 8507. Full information about your LS1 24/24, please specify any other information you may require.

Name \_\_\_\_\_  
Position \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_

## Company lands Saudi £2.6m contract - but bank withholds backing

by David Craver  
A £2.6 MILLION export contract won by Computer Resources to develop software for a Saudi Arabian government agency has failed to secure full backing from the company's bank.

The Saudis require a performance bond worth 5% of the contract price, and Computer Resources has had to divert £130,000 of working capital to cover it after failing to raise the money from NatWest.

The two-and-a-half-year turnkey contract is for an online information system and will involve software development, technical support, operation, maintenance and training.

It will require 35 man years and 40,000 hours of terminal connection time to complete, the largest ever for Computer Resources, and will represent almost one-third of the company's current annual turnover during the 30-month contract period.

It is part of a complete data centre being installed for the Gen-

eral Presidency of Youth Welfare as part of the Saudi Arabian government's Third Economic Development Plan.

Computer Resources' managing director Ian Orrock is critical of NatWest's response to the company's request for funds to meet the cost of the performance bond.

"The clearing banks don't understand how one does business in the Middle East... sometimes they don't even seem to speak English,"

A NatWest spokesman emphasised that the bank is always happy to provide British companies with support in securing export business, providing discussions take place in the proper time.

"The customers are still in consultation with the bank to resolve a suitable way forward," he said.

A 10-20% profit increase on sales of £34 million is expected to be shown when 1980 year-end results are released within the week, according to Orrock.

The company plans to begin a concerted push for additional



ORROCK... "The clearing banks don't understand".

Middle East orders, and also hopes to announce a large software contract in Britain within the next few weeks.

The Saudi bid was won against competition from seven other companies, the strongest of which apparently came from France. Computer Resources represented the only British competitor.

## Scope for mini user group

by Chris Youett  
USERS of West German made CTM minicomputers which were serviced by Scope Data Systems, the Sheffield company that recently went into liquidation, met last week to press the manufacturer on how it will continue its support. Scope had exclusive maintenance and distribution rights in the UK.

A Midlands user, Marlow Engineering, was behind the formation of a user group last week. Its spokesman, Paul Fennell, said some of the users had an ad hoc maintenance agreement with Scope staff.

"Fortunately for Marlow," he said, "we have had no breakdowns during the last five weeks and I hope the CTM will set something in motion shortly," said Fennell.

A CTM spokeswoman said that, standing, West Germany said the firm was currently interviewing prospective distributors from the UK and would be making a decision on a new appointment during the next two months.

## Computer Weekly

Thursday  
April 2, 1981  
Vol. 30 No. 751

100,000 circulation  
- the highest of any computer journal in Britain

IPC Electrical-Electronic Press Ltd, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS. Telex: 892064 BISPP

EDITORIAL		DISPLAY ADVERTISING		CLASSIFIED ADVERTISING		CIRCULATION	
Editor	01-461 2200 ext. 242/25/26	Advertisement Manager	01-461 2107/0102	Advertisement Manager	01-461 2100	Terms of circulation control	Computer Weekly is sent free of charge to the following categories of subscribers:
Editorial Editor	01-461 2122	Deputy Advertisement Manager	01-461 2125	Deputy Advertisement Manager	01-461 2101	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2123	Sales Executive	01-461 2126	Sales Executive	01-461 2102	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2124	Sales Executive	01-461 2127	Sales Executive	01-461 2103	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2125	Sales Executive	01-461 2128	Sales Executive	01-461 2104	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2126	Sales Executive	01-461 2129	Sales Executive	01-461 2105	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2127	Sales Executive	01-461 2130	Sales Executive	01-461 2106	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2128	Sales Executive	01-461 2131	Sales Executive	01-461 2107	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2129	Sales Executive	01-461 2132	Sales Executive	01-461 2108	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2130	Sales Executive	01-461 2133	Sales Executive	01-461 2109	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2131	Sales Executive	01-461 2134	Sales Executive	01-461 2110	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2132	Sales Executive	01-461 2135	Sales Executive	01-461 2111	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2133	Sales Executive	01-461 2136	Sales Executive	01-461 2112	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2134	Sales Executive	01-461 2137	Sales Executive	01-461 2113	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2135	Sales Executive	01-461 2138	Sales Executive	01-461 2114	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2136	Sales Executive	01-461 2139	Sales Executive	01-461 2115	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2137	Sales Executive	01-461 2140	Sales Executive	01-461 2116	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2138	Sales Executive	01-461 2141	Sales Executive	01-461 2117	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2139	Sales Executive	01-461 2142	Sales Executive	01-461 2118	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2140	Sales Executive	01-461 2143	Sales Executive	01-461 2119	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2141	Sales Executive	01-461 2144	Sales Executive	01-461 2120	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2142	Sales Executive	01-461 2145	Sales Executive	01-461 2121	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2143	Sales Executive	01-461 2146	Sales Executive	01-461 2122	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2144	Sales Executive	01-461 2147	Sales Executive	01-461 2123	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2145	Sales Executive	01-461 2148	Sales Executive	01-461 2124	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2146	Sales Executive	01-461 2149	Sales Executive	01-461 2125	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2147	Sales Executive	01-461 2150	Sales Executive	01-461 2126	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2148	Sales Executive	01-461 2151	Sales Executive	01-461 2127	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2149	Sales Executive	01-461 2152	Sales Executive	01-461 2128	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2150	Sales Executive	01-461 2153	Sales Executive	01-461 2129	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2151	Sales Executive	01-461 2154	Sales Executive	01-461 2130	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2152	Sales Executive	01-461 2155	Sales Executive	01-461 2131	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2153	Sales Executive	01-461 2156	Sales Executive	01-461 2132	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2154	Sales Executive	01-461 2157	Sales Executive	01-461 2133	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2155	Sales Executive	01-461 2158	Sales Executive	01-461 2134	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2156	Sales Executive	01-461 2159	Sales Executive	01-461 2135	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2157	Sales Executive	01-461 2160	Sales Executive	01-461 2136	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2158	Sales Executive	01-461 2161	Sales Executive	01-461 2137	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2159	Sales Executive	01-461 2162	Sales Executive	01-461 2138	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2160	Sales Executive	01-461 2163	Sales Executive	01-461 2139	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2161	Sales Executive	01-461 2164	Sales Executive	01-461 2140	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2162	Sales Executive	01-461 2165	Sales Executive	01-461 2141	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2163	Sales Executive	01-461 2166	Sales Executive	01-461 2142	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2164	Sales Executive	01-461 2167	Sales Executive	01-461 2143	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2165	Sales Executive	01-461 2168	Sales Executive	01-461 2144	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2166	Sales Executive	01-461 2169	Sales Executive	01-461 2145	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2167	Sales Executive	01-461 2170	Sales Executive	01-461 2146	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2168	Sales Executive	01-461 2171	Sales Executive	01-461 2147	Advertisers	to the following categories of subscribers:
Deputy Editor	01-461 2169	Sales Executive	01-461 2172	Sales Executive	01-461 2148	Advertisers	to the following categories of subscribers:



# YOU CAN'T MATCH OUR PRICES

ALWAYS KNOWINGLY LESS EXPENSIVE Show us an advertised or quoted price lower than we've invoiced you within seven days of ordering and we'll refund the difference or renegotiate your order.



01-688 2724/6  
**COMPUTRADE**  
Telex No. 946179

## Programs for personal users via Prestel

by Donald Kennett

AN eagerly awaited experiment in telesoftware is to get under way next month when the magazine Practical Computing takes up British Telecom's offer of 1,000 free Prestel frames to publish programs sent in by readers.

Despite being attracted by the idea, Practical Computing editor Peter Laurie had initially shown reluctance to run the project, realising that checking and inputting the programs might place an unwelcome burden on staff for no benefit to the magazine. He asked Information Technology Minister Kenneth Baker for DoI funds to support the work, but Baker refused.

Now IPC Business Press, which publishes Practical Computing and Computer Weekly, has agreed to pay for a year's part-time work on the project.

Micro maker Research Machines is also providing support for the project in the form of a big discount on an RM380Z to be used

for checking and loading the programs.

Laurie hopes to start up on May 1 with about a dozen free programs, in Basic, probably all games, but has not yet been given the block of page numbers by Prestel. The guidelines agreed with Prestel propose 100 pages for editorial material and 300 each for games, educational and business software.

"We hope to stimulate a market for telesoftware," said Laurie. "Initially programs put up will be read and re-keyed, but if it works, the market will supply interfaces to allow them to be loaded automatically. Customers will vote with their wallets, both in buying devices and in using Basic."

"We rely on what people send in - this is the way Practical Computing works."

"There will be a lot of overlap: the programs on Prestel will be a subset or a superset of the programs in the magazine. Half the stuff we get is for the Sinclair ZX80."



LAURIE... "We hope to stimulate a market for telesoftware."

## Fujitsu to cut overtime

FUJITSU is restricting excessive overtime, and workers who try to beat the ban will be able to do so only under doctor's orders. Concerned that overtime of more than 70 hours a month is bad for an employee's health, Fujitsu management has designated two days a week as non-overtime days, according to the Japan Economic Journal.

The company recognises that individuals involved in software production work outside normal

hours, but now requires that those who do more than 70 hours overtime monthly must have a medical certificate. The concern is that an individual member of a team involved in software development, for instance, might be lost to the company because of excessive work.

IBM Japan, Fujitsu's main

competitor in Japan, has similar procedures to reduce employees' workload to levels of the level of three years ago.

## Independent grocers link up with Syfas

by David Craver

A VIEWDATA system designed to link independent grocers with their wholesale distributors and provide instant information on stock availability, pricing, and market trends has been announced by Spar wholesalers James Hall & Co. of Preston. Based on two CompuLink Automation Syfa minicomputers, the system, known as Syfas, provides small retail grocers with a VDU at their own localities with two-way communication to their central supplier.

Currently 27 customers are on the central computer. One Syfa handles order input from the shop remote terminals, while the other runs Hall's integrated financial, accounting and stock control. The company estimates that with the installed hardware the system could be shared by up to 100 retailers.

Design of the system was largely by James Hall's managing director

Ian Hall. Software was written by MFT Computers of Manchester and Leeds in Syfa's interactive business language, Sybol, and total development cost was £250,000, according to the company.

The two-way communications capabilities of the system are "very important," according to Hall, since decisions on out-of-stock items can be made immediately by the retailer, while orders are processed and despatched daily.

The system hardware comprises two Syfas which communicate over a synchronous link emulating IBM 3780 protocol. They have 160 and 240 megabytes of disc storage respectively, two matrix printers, and a 300 lpm printer. The retailers access the system through Regent 25 VDUs. They currently share four lines into the Syfa, while the system can support 16 lines.

There are 200 Syfa systems currently installed in the UK.



Preparing to key in her weekly stock to the Telsys system is Edith Howard, manager of a grocery store at Walmer Bridge, Preston.

## Classroom computers

KENT Education Committee is to spend £50,000 a year over the next five years to put computers in the county's classrooms.

Committee chairman John Barnes is keen to see all Kent's 130 secondary schools with their own computers. So far about one-third have them.

Part of the cash vote will be spent on a study to see how the computers can aid school administration.

Secondary schools will receive a grant of £600 each to help towards

the purchase of computers. The balance of the cost of equipment is expected to be met from Parent Teacher Association funds and local industry.

"Many schools and PTAs have already taken matters into their own hands and raised the money to buy microcomputers," said Barnes.

The Education Committee wants to see courses introduced for computer science and computer studies for CSE, O level and A level examinations.

## DEC offers double power and memory

TWICE the power and twice the memory size of the Digital Equipment PDP-11/04 at only 30% greater cost is offered by DEC's latest PDP-11 machine, the 11/24. With the 11/24 launch DEC has added four new models to its Datasync end-user line, all based on the new machine.

The 11/24 is implemented in custom MOS/LSI technology and is the lowest priced DEC minicomputer with a megabyte capacity. It provides four times the memory expansion of the PDP-11/34A as

well as 90% of its integer performance while costing 30% less. Prices start at £6,500.

Expansion to one megabyte depends on an optional 22-bit extended addressing module.

The new Datasync models are the D346 and 348 which top the Datasync-300 series and the D522 and 528 which are entry level systems in the Datasync-500 family. Standard memory sizes are 128K-bytes on the 346, 256Kbytes on the 348 and 522 and 512Kbytes on the 528.

## Yellow Pages order

KYLOGICS will supply five XY2300 Winchester computer systems for online processing of the Post Office Yellow Pages advertisement sales. The system is being developed by ITT World Directories (UK) which is responsible for two-thirds of the total sales for the Yellow Pages in the UK.

The order marks Kylogics' first sortie into the end-user market with a total system. The value of the hardware is about £60,000. Up to 90 contracts an hour can be entered at each of four regio-

nally located systems in sales offices in Glasgow, Manchester, Birmingham and Bristol. A fifth system will be installed at ITT World Directories headquarters.

Data collected at the regional centres will be sent up daily via dial-up telephone lines to update a central file held on ITT's DEC VAX central computer facility in Birmingham. Automatic dial-up of each of the XY2300 systems by the central DEC computer to enable nightly transfer of information is being developed by the company.

## UK out of proposed European datacoms link

by Jack Gee

GERARD THERY, managing director of the French Post Office's telecommunications authority, has called for wide-ranging co-operation between France and Germany in data communications - without any reference to partnership with the UK.

Thery, who was speaking in Frankfurt, said: "Our two

countries must seize the opportunity to ensure they have the best trump cards in their hands, both in Europe and throughout the world. They can help to set up a vast European market for the new generations of equipment."

He was addressing Bundespost officials and West German business leaders at a symposium organised by the big French banking

group, Credit Industriel et Commercial.

The French telecommunications chief warned that a war over standards between European manufacturers could only profit the US and Japan.

Appealing for a "reinforcement of industrial alliances" between France and West Germany, he said French and German firms

should tackle future products as electronic telephone systems and memory cards "in a spirit of co-operation between our countries."

But the French Post Office official's remarks appear to have fallen on stony ground in Germany where there is impatience at France's progress in launching new datacoms products.

## Electronic typewriter to word processor conversion offered

by Rory Johnston

THE firm fruits of Olivetti's acquisition of 40% of the US firm Syntrex have appeared in the form of a kit to convert an electronic typewriter into a word processor.

With the addition of a screen and a multiplot disc drive, users can Olivetti ET 221 or ET 201 electronic typewriters can acquire word processor with plenty of advanced features.

Syntrex's development is basically software, and it has also been demonstrated in the US on IBM model 75 electronic typewriters. Olivetti calls its system the ETS 1010, charging £3,995 for the system and £200 for the conversion kit, consisting of some documents and new key tops, which can be fitted to the typewriter in the field. The basic ET 221 typewriter costs £1,399.

Later this year a keyboard will be launched to make the ETS 1010

into a word processor on its own; a separate printer will also be available to give 30 cps instead of the 221's leisurely 20 cps. Four keyboards will be able to share one printer.

For 1982 the model 1020 is planned, providing hard disc storage and up to 14 keyboards per system. The Syntrex software is available only on rental, at £12 per month. Extra software is needed for tabular typing, form filling, mathematics and sorting.

Among the unusual features of the screen are a smooth scroll, so there is no jump from line to line, windowing, so a variable space is available for system messages underneath the text, and "folding," which allows the extremes of a wide document to be shown on the screen, leaving out the middle.

Converted typewriters can be switched back to use on their own whenever required.

## Compec North rush

THREE-QUARTERS of the space available for the Compec exhibition has already been booked after just four weeks of advance booking. The Manchester-based firm, the first of Compec's series of computer exhibitions, is to be held at the North, taking place at Belle Vue from June 23-25.

Compec's executive director, John Timmins, which is the show on behalf of the exhibition, which is sister to the sister exhibition, "Clearly we've been very busy, and I would say anyone thinking of exhibiting at Compec North to get in early."

Compec-related exhibitions, like the ACE (Peripheral) support digital transmission, and the small number will not be able to.

running this year, and others - like Computermarket - have suffered a decline in bookings.

The initial stand allocation at Compec North is in the 3,700 sq metre Lancaster Hall, close to the city centre, with parking space for 3,000 cars.

Each exhibiting company gets 200 free visitor tickets to allow it to attract special target groups, otherwise there is to be a £2 charge at the door. This follows the successful introduction of charging at the main Compec show at Olympia, London last November, which dissuaded casual callers and ensured a high quality business attendance.

Contact: Compec North, IPC Exhibitions, Surrey House, 1 Throby Way, Surrey SM1 4QQ.

## Hugin aims at retail chains

Small retail chains are the target of Hugin's data entry terminal for the UK by Hugin Computers. The unit, the Hugin 100, is produced by Hugin, a Swedish firm, and is aimed at small retail chains. Hugin is a member of the Hugin Group, which has a long history of stock control and data entry systems for the retail trade. Hugin 100 can make one of

two-way communication with a central computer by modem or acoustic coupler. Data collected can be transferred either by telephone line or by use of a memory pack.

The Hugin 445 can be customer programmed and loaded. The unit comes with 8 to 64K of CMOS memory.

## Sabotage gang wrecks IBM bank system in computer war revival

by Jack Gee  
SABOTEURS broke into a bank at Toulouse, South-west France, last week and wrecked an IBM computer in a revival of the "computer war" which was launched in the area exactly a year ago.

The raiders target was the local headquarters of the Banque Populaire. They smashed their way into the building by breaking a window. The automatic alarm sounded, just allowing them time to damage the computer, a terminal and line printer before making their escape.

The saboteurs left no clue to their identity and have not issued any claim for responsibility. This silence contrasts with the publicity which Clodo - short for Committee for Liberation and Arson Against Computers - has given to its activities over the past year. During this period not a single arrest has been made.

Clodo (CITING) was not "born" into the news last spring when it set off bombs at data processing centres in the Toulouse area operated by Philips Informatica and CIT-Honeywell.

A few weeks later the terror group burst down a shop run by CIT in the city, in June they ransacked a hall which was being prepared for an international symposium of computers. Signing

themselves Clodo, the gang left behind the message: "Scientist swine. No to capitalist data processing."

In August a 10-lb. plastic bomb failed to explode when it was placed outside CIT-Honeywell Bull's centre at Louveciennes, near Paris. But the raiders broke down a security door protecting a computer and confidential software. They bored a hole in a wall, hoping to use this hiding place later for another charge of explosives.

Clodo's attacks on CIT-Honeywell Bull property were all accompanied by threats against the lives of the company's managers.

Returning to the Toulouse area in September, Clodo lit three fires simultaneously at a computer and electronics goods shop. The entire premises were gutted.

Clodo again saboteaged the police when it set a seven-storey office building on fire in Paris' Opera district on December 2. Computers owned by a major insurance company were saved during the blaze which spread up to the roof. A police official said after the latest sabotage raid in Toulouse: "It is reasonable to expect that Clodo and similar groups will step up their activities against computers during the weeks leading up to the French presidential election in April."

## Brazil viewdata choice

BRASIL has chosen to use viewdata terminals based on the French Telsys system for its national telecommunications network. The choice, which is not necessarily final, will be based on a trial of the system in the capital, Rio de Janeiro. It was reported last week that the Brazilian telecommunications company concerned is being bought to prefer Prestel on technical grounds and to be in-

terested still in signing a further contract with British Telecom's Telsys consultancy service.

It was decided to run a Telsys trial because the necessary equipment was offered free (as has been done in the US) and the offer was part of a trade package that included a 22 billion loan.

## NEWS BRIEF

### Govt raises R&D support

SUPPORT from the Department of Industry for research and development has been increased by £38 million in the government's expenditure plans for 1981-82. Much of the £28 million increase (allowing for inflation) is expected to go on applications information technology, robotics and CAD/CAM, and on the Microprocessor Applications Project. The other £10 million will be spent on search.

### ICL replaced

KINGSTON Polytechnic has replaced ICL with a new contract with two Digital Equipment Corporation systems. Now installed, the DECsystem 20 for general purpose computing and a VAX for technical work.

### Saudi phone

SAUDI ARABIA has contracted with Philips of Holland to supply a telephone system. The contract is for a project to build a telephone system for the Ministry of Defence. The system is to be installed in the Ministry of Defence building in Riyadh.

### Seconded to

PHILIPS Video Division has been seconded to the Department of Industry for the next six months, to help with the development of the DoI-sponsored video and television systems. The seconded staff will be working on the development of the video and television systems for the DoI.

## HAMILTON NEW LOW PRICES

Effective from March 1981

WORD PROCESSORS	RENTALS FROM 3 months	6 months	12 months	Sale Price
DEC W278 stand-alone system, VDU, printer, communications	425	355	295	4985
WD82 two-user system, 2VT100s, 2 dual floppy discs, printer	-	654	545	11100
WORD-11 (FDP11 word processing software)	-	475	380	4500
Options	-	48	40	725
Automatic sheet feed	-	-	10	8
Acoustic hood	-	-	-	220
MINI COMPUTERS	RENTALS FROM 3 months	6 months	12 months	Sale Price
DEC PDP11/03	541	416	343	5985
PDP11/03	966	743	612	10160
PDP11/23	725	557	458	7828
PDP11/34	1446	1113	916	18239
PDP11/44	2465	1935	1587	28184
PDP11/50 (including terminal)	480	385	325	4950
Datasync D326	1400	1090	780	15500
LINE PRINTERS	RENTALS FROM 3 months	6 months	12 months	Sale Price
Centronics 6300 300 LPM printer (includes options)	320	245	198	3150
6600 800 LPM printer (includes options)	415	315	250	4050
DESK-TOP COMPUTERS	RENTALS FROM 3 months	6 months	12 months	Sale Price
Hewlett-Packard 9815A	195	153	127	2056
9815B	208	164	136	2188
9815C	308	218	175	4227
9825S	588	448	371	5960
9836A	1185	895	740	12000
9845T	1850	1375	1120	21895
9845C	245	200	158	2880
9872S 4 pen printer/plotter	432	342	282	4540
9874A digitiser	150	119	98	1564
9875A dual tape cartridge drive	218	171	141	2275
9876 thermal printer	95	74	61	783
9878	148	120	94	1685
9885M flexible disc drive master	116	85	74	1300
9886S flexible disc drive slave	-	-	-	-
TERMINALS	RENTALS FROM 3 months	6 months	12 months	Sale Price
DEC LA36	47	42	35	475
LA38	50	45	38	540
LA38 DA	55	50	42	625
LA38 AA	100	85	75	1295
LA38	130	110	90	1485
LA120 KSR	120	100	85	1425
LA120 R/O	120	100	85	1425
VT100	80	70	59	825
V132	80	70	59	825
Telex 743	85	75	64	1105
745	105	92	77	1185
755	180	135	104	1985
765	198	153	125	2195
785	115	102	87	1450
810	125	102	87	1450
820 KSR (full spec)	120	97	80	1300
820 R/O (full spec)	120	97	80	1300
Hazeltine 1410	42	37	32	475
1412	44	39	32	475
1500	75	68	58	860
1512	85	75	63	1050
1620	85	75	63	1050
1982	85	75	63	1050
Hewlett-Packard 2621A	32	24	20	270
2621P	145	114	95	1510

Hewlett-Packard (continued)		RENTALS FROM			Sale Price
		3 months	6 months	12 months	
2631A		187	155	128	2074
2631G		249	195	162	2621
2635A		225	172	143	2370
2647A		418	345	270	4614
2648A		275	230	180	3267
Digital					
1650 KSR		190	145	120	2085
1650 R/O		150	120	100	1675
Teletype Model 43 printer		70	58	48	620
<b>GRAPHICS DISPLAY TERMINALS</b>					
Tektronix					
4010-1		280	215	170	3048
4012		410	324	260	4820
4013 ASCII/APL		400	320	268	4876
4014-1		675	560	435	7871
4015 ASCII/APL		735	620	495	9007
4018-1		920	750	585	10809
4631 hard copy unit		235	192	150	2744
4632 video hard copy unit		235	192	150	2744
4632 X-Y plotter		220	180	140	2580
4633 interactive plotter		520	427	335	5087
4923		115	95	75	1347
4953		172	145	112	2023
4954		280	230	182	3268
4957 colour graphics		480	380	330	5058
4958 graphic computing system		325	254	225	3455
4959 graphic computing system		600	473	410	6307
4964 graphic computing system		690	562	478	10425
<b>OFFLINE STORAGE</b>					
Teletype					
815		85	65	55	1098
815EE		112	90	68	1235
<b>MICROPROCESSOR DEVELOPMENT SYSTEMS</b>		<b>RENTALS FROM</b>			<b>Sale Price</b>
		Weekly	3 months	6 months	
MDS 231		200	770	735	650
MDS 221		170	655	625	560
287 FD		330	1290	1215	1075
Tektronix					
8002		330	1280	1215	1075
Motorola					
EXCORoletr II		200	770	735	650
EXCORoletr II		275	1080	1015	895
EXCORoletr II (6809)		325	1250	1195	1055
EXCORmax		445	1710	1640	1445
Texas					
AMPS 80500		900	1155	1105	975
TMS 80500 emulator		85	385	350	310
National Semiconductor					
Starbliss		275	1080	1015	895
Futuredata					
AMDS		250	990	920	815
Zilog					
ZDS400		250	990	920	815
MOZ1005		150	575	550	480
RCA					
Comstat dev system		200	770	735	650
All prices quoted exclusive VAT					
Purchase option scheme provides advantages of 95% of retail price					
Stock Control, Payroll, Sales/Purchase and Nominal Ledgers					
Word Processing, Information Storage and Retrieval					
Financial Reports, Language Translation, Finite Stress Analysis					
Numerical Control, Commercial Graphics, Databases and prices on application. Prices marked 'ike' are for ex-rental equipment.					
<b>The TOTAL Answer</b>		<b>HAMILTON</b>			
HAMILTON		HAMILTON Rentals Limited			
HAMILTON		HAMILTON House			
HAMILTON		New Canal Road			
HAMILTON		LONDON W9 7UB			
HAMILTON		London 01-261 6772			
HAMILTON		Birmingham 021-226 0351			
HAMILTON		Manchester 061-276 0355			
HAMILTON		Cardiff 0492 0010			
HAMILTON		Central Scotland 01 9392			
HAMILTON		Aberdeen 0224 2590			
HAMILTON		P.O. Box			
HAMILTON		Dunstable			
HAMILTON		Hampshire			
HAMILTON		New York			



# Infoline service is back in business with VAX machine

by Rory Johnston  
PROSPECTS for the much-troubled UK online information service Infoline look good, following a decision to buy a dedicated Digital Equipment VAX 11/780 to re-start the service and the selection of Battelle Institute's Basis retrieval software.

Robert Maxwell, of Pergamon Press, who bought Infoline in June last year, has enlisted some of its former owners, the Royal Society of Chemistry, the Institution of Electrical Engineers, and the

British Library, to serve on an advisory board for the service.

Infoline has been out of service since September 1980 when it was taken off GSI's Univac 1100, which it had outgrown. Plans to use an IBM 4300 at Scicon fell through because Infoline staff were not keen on IBM hardware suitability.

When Battelle released its version of Basis specially developed for the VAX, it was decided to plump for that, particularly since Infoline had been using Basis be-

fore and customers were familiar with it.

The DEC machine will cost £500,000.

Infoline staff, before the Pergamon takeover, did several years' work on modifications to Basis, and this will be incorporated in the system to be installed in central London at the end of April. The service, with about seven-million records of engineering and chemical abstracts on line, should start in July.

The suspension had been unde-

sirable from a marketing point of view, commented Infoline sales manager Peter Nichols, but he was "pleasantly surprised at the number of customers still interested" that he was meeting.

The system will be accessible by PSS within the UK and on Euro-net, and also in the US via IPSS, though little emphasis was being placed on the US market as yet.

Preparatory file conversion is already going ahead on Battelle's VAX machines in Columbus, Ohio.



## Marathon effort by Telepen

by Keith Jones

SUCCESS in last Sunday's London Marathon was not confined to the winning runners. One of a few all-British companies involved with the event, S B Electronic Systems, was more than delighted that its Telepen system managed to carry correctly all the two-way tags around the rain-soaked and muddy 26-mile course.

The tags were pulled off the vests of the runners after they completed the race and were batched up in order of finishing. They were then read by a hand-held 12 Telepens into an Olivetti computer which coupled the runners' codes against the chronologically recorded finishing times to establish exactly who finished when.

The Olivetti system was able to find out if any runner had illegally by checking with an against a list of valid runners. Programming was in a matter of extended Basic with additional instructions for file management and peripheral handling and an assembly language based on the 360 assembler.

The time if not his exhaustion after completing the first London marathon last week was measured and recorded by S. B. Electronic Systems and Olivetti.

## Estate agency aid

AN estate agents software package designed to record applicant and property details, perform selection and matching routines and record sales details has been released by Selven Systems in Essex.

Selven claims that the user will save on postage of property details and will assist identification of the most likely purchaser. The system is written in CBasic-2.

## At their leisure

PARIS-BASED holiday operation Club Mediterranée will offer its "gentle members" a computer familiarisation course at Marina, its new resort village in Italy, this summer.

The French telecommunications authority, Thomson - CSE, CII Honeywell Bull are co-operating in setting up a workshop equipped with microcomputers.

## MICRO NEWS

# UK-built speech synthesis chip in competition with US giants

A BRITISH microprocessor consultancy company, Triangle Digital Services, based in the City, has designed its own speech synthesis chip which it has incorporated on to a printed circuit board speech synthesiser, the TDS 910.

Aimed at the low volume industrial systems and security systems markets, the TDS910 can speak by the operation of microswitches or relay contacts. It can say the numbers 0-9, key words like "point" or "kilo" warnings such as "fire" - "get out" and "limit reached". It can also speak measurements of weight or length.

The speech chip can synthesise sentences, phrases, and phonemes when triggered by one of three inputs. These are the above-mentioned switches, remotely over a two-wire universal asynchronous receiver-transmitter interface, and through a standard eight-bit parallel port.

Storage of the speech is a 32K PROM standard with room for two extra ROMs which can store up to 70 words. This capacity can be expanded further with add-

itional ROMs.

Competing with established US giants like Texas Instruments, National Semiconductor and General Instrument Microelectronics, Triangle's director Peter Rush is all set to manufacture the speech chips.

It all started a year ago, he told Computer Weekly, when he realised that soon there would be a great demand for speech synthesis in industry and little expertise to back it up.

From there he set out to study the concept of speech synthesis and designed his own chip, which led to the "easy-to-use" speech module. Rush's method of breaking down the speech and encoding it lies somewhere between the linear predictive coding method implemented by TI and the waveform compression method used by GIM. In fact it contains some elements of both.

His service, which costs about £100 per word, offers speech at three levels of quality. The analysis procedure can originally be carried out on a phoneme, a

word or a phrase, each of which becomes a building block for the utterance assembly information, which is stored in ROM with the speech parameters.

The prototype board TDS910 was completed in January. The board contains the speech chip, the TDS90, which is a 40-pin dual-in-line device, interfacing circuitry and the speech storage ROMs. Rush emphasises that no microprocessor is required, unlike his competitors' sets which are used in consumer products.

The actual speech chip performs three functions: speech synthesis; putting in utterance; and decoding a signal indicating which word or phrase is required.

If a customer wanted the standard board with six custom words for a particular application it would cost him about £600 and delivery would take three weeks plus a further two weeks for each ten words to be analysed.

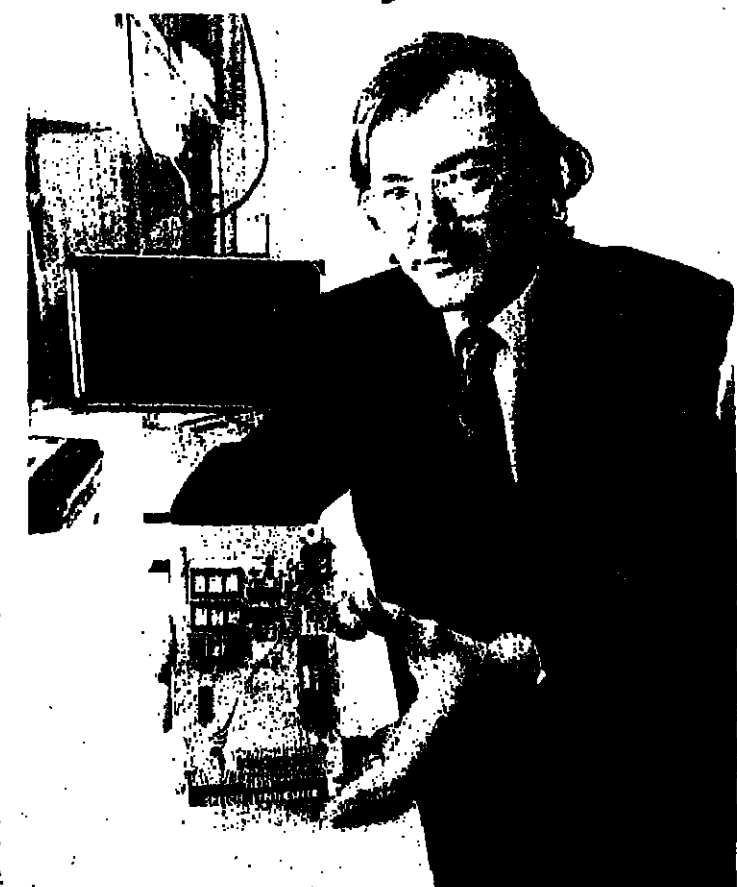
Quality of speech depends on the level of analysis as indicated before, whether on a phrase, word or sentence, and also on the

amount of bits of storage assigned to each word or phrase. Rush's analysis system can stretch from 700 bits per word to 5,000 bits per word.

The more usual rate of storage is 2,000 bits per word (similar to National Semiconductor's chosen storage rate) and this is used on the standard set of words supplied. Thus, a 32K ROM would contain 16 words but this could be doubled to 32 words if the user needed to cut space or cost.

Any person's voice can be used for the original analysis to obtain the speech parameters, so the system can become personalised. With a licence obtainable from Peter Rush, the user can even acquire the necessary equipment and have training so that he can do his own speech analysis.

The TDS910 speech synthesis board is available in the UK from Triangle Digital Services in the City and Semiconductor Specialists (UK) in West Drayton for a price of £152.45 in one-off quantities. Standard vocabulary memories are also available.



Peter Rush, managing director of Triangle Digital Services with his speech synthesiser... no microprocessor is needed.

## Nicholas Enticknap reports on the Civil Service and banking pay disputes

# Strikes cut government revenue by 40% Work-on management dilutes bank action

AS the programme of industrial action mounted by the Civil Service unions entered its fourth week, the unions issued a statement saying that their actions have denied the government about 40% of its normal revenue.

They say that in the first two weeks of the action only £99 million of VAT payments were banked, compared with the average of £700 million, while in the first week only £134 million of National Insurance payments were made, compared with the normal £315 million.

These figures were released following a statement in the Commons by Sir Geoffrey Howe that "a substantial proportion of the revenues due has been received".

Two further government com-

puter installations have now joined those already on strike, bringing the total number of sites affected to 14.

The first is the DHSS centre at North Fyde, which transfers money from the National Insurance fund to the National Health Service and to other smaller DHSS departments. The effect of this action will be to prevent inter-government financial transfers worth £80 million a week.

The second new strike is at a Ministry of Defence installation at Liverpool, where nine computer operators have been called out. This installation makes payments averaging £80 million a week to large and small defence contractors, and banks receipts averaging £20 million a week. All these transactions will be halted.

THE THREE one-day strikes held at major clearing bank computer centres by the Banking Insurance and Finance Union (BIFU) last week had less impact than the unions had anticipated.

Both Lloyds and Barclays reported minimal effect, though the union says that 100% of its membership responded to the strike call.

The strike at Lloyds' London installation meant that about 20% of the day's work could not be completed, according to a bank spokesman. All cheques received from other banks were processed, besides about one million from the bank's own branches.

The Cashpoint cash dispensers were working normally from about 9am; they were out of action for a while before that, but this was due

to a technical fault and not a strike. The two Barclays installations at Gloucester and Wythenshawe suffered even less disruption.

The only effect was that some of the output (bank statements and the like) was distributed a day later. The Barclaybank cash dispensers worked normally. A major reason for the ineffectiveness of the BIFU action was non-co-operation of the other major banking union, the Clearing Banks Union.

CBU members are also negotiating a pay claim, but for a lower amount, and were instructed to work normally even if this meant crossing picket lines.

The CBU is not affiliated to the TUC, and draws its members mainly from middle management among the bank employees.

## Viewdata conversion program takes off

by Donald Kennett

LANGTON Information Systems, the London-based bureau and consultancy serving the publishing industries, is experiencing a surge of interest in its three-year-old Preview program which converts mainframe data files into a viewdata database. It has made three sales in Europe and has received an EEC grant to make the system compatible with all planned European viewdata services.

Director John Durham said the market had matured, and the relationships between the various areas - private and public systems, gateways and bureau services - were becoming better understood.

Ringier, one of Switzerland's largest publishers, has bought

Preview to convert files both for the public viewdata service and for its in-house system which is based on Systems Designers' IVS-3.

In Belgium, Langton has sold a licence to operate Preview as a bureau service to Bell Telephone Manufacturing, which at the end of last year launched a viewdata bureau based on a GRC 4085 running Prestel software.

A second Belgian company, Centre Informatique Generale (which last year bought out Lowndes-Alax in the UK) has bought Preview to use with the viewdata system it is developing in-house.

The EEC funding is to cover the majority of the cost of the design phase of a universally compatible version of Preview to be completed in June. Minority funding is com-

## Shake-up for Fujitsu Word Machine group

by Rory Johnston

FUJITSU has reorganised its US Word Machine group following delays in the launch of its IBM-based word processing system, which has been under development since 1978.

The reorganisation, according to new group manager Charles Palmer, is to enable the product to take advantage of Fujitsu's R&D expertise and new developments such as bubble memory.

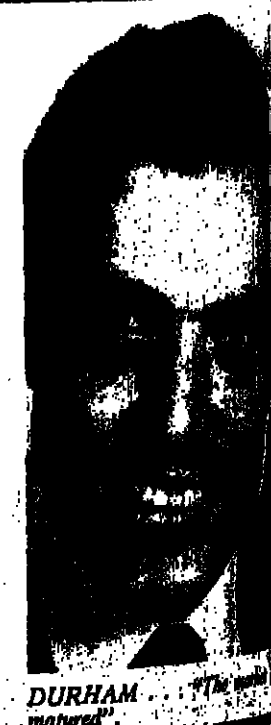
The concept of the Word Machine word processor was to use IBM's 360 and 370 to run word processing software, to give the equipment a new lease of life. This philosophy, Palmer told Computer Weekly, had been enhanced by IBM's "statement of direction" last summer that it would aim to provide ways of linking all its text processing pro-

ducts. Large integrated systems would be boosted in the eyes of the marketplace since IBM had blessed the concept, Palmer said.

But IBM had then indicated that the world should wait for it to come up with the goods.

Palmer remarked: "I agree with everything except the waiting. He has his machines on field trial now and hopes to launch them in the market in June."

The specially-built terminals with Word Machine attaches to the IBM mainframe have been completely redesigned. Each contains a microprocessor and 96K of memory. Palmer does not agree with local storage, since he feels files should be the property of the company and not of the author, but he sees this as a prospective customers need local storage.



DURHAM: "The market has matured."

## Peace hopes in health centre strike

HOPE was high of a peaceful end to the 30 computer staff North-West Regional Health Authority computer centre strike.

Half the staff at the centre still in dispute three weeks ago returned to work agreement was negotiated nationally for all health authority computer centres.

Dr. T. G. H. Jones, the Health Authority's medical director, said: "The strike has been a disappointment, but we are now back to work."

A return to work has been agreed because the Regional Health Authority and the union NALGO, have been unable to agree on whether authority files should be the property of the company and not of the author, but he sees this as a prospective customers need local storage.

## Dealers lose out on Apple education offer

SOLE UK distributor for Apple, Microsense Computers of Hemel Hempstead, is offering a discount purchasing scheme for education, similar to the one the company ran at this time last year. For a limited period in March, April and May, Apple systems will be available at 20% off normal retail prices.

Unfortunately for Microsense, the offer may have been made at the wrong time, while schools are still waiting for the microcomputer money promised by the government. Even so, the company expects a lot of last-minute purchases.

In real terms Microsense will lose nothing on the deal - it's the dealers that lose out. Apple dealers normally buy from Microsense at a 20% discount, but with the 20% discount for schools on top, this means they will make only 5% out of the sale.

Mike Sterland, managing director of dealer Personal Computers, told Computer Weekly that the offer extends the customer's

payment time by 30 days. So the dealer would be using some of his small profit to finance debts for these deals for up to three months.

Another problem with schools is the extra attention required, and expected, from a deal. By the time the dealer has delivered, set up and got an Apple system going, there is little, if any, of his profit left.

Sterland also pointed out that the offer includes related accessories and peripherals. Some of these are bought from Microsense at 20% discount in the first place, so the dealer ends up giving them away.

Another dealer, Microdigital (now part of Lasky), says it is having nothing to do with the scheme. All sales made under the name of Lasky must carry a certain percentage profit margin.

A typical 48K Apple system with one disc controller, a black and white monitor and ten blank discs sells retail for about £1,500, which makes the 5% profit margin just over £50.

## Philips 16-bit system has 4-gigabyte virtual memory

A 16-bit microprocessor that has 4-gigabyte virtual memory storage space is being designed by Philips Electronics company Philips Systems of Aalst, Holland. The system is said to have four times the virtual address space of a new 16-bit device, the 68000.

Philips claims that when the chip is completed it will represent a milestone in a large-scale integrated circuit configuration. The set will be compatible with the 68000 plan's P800 microcomputer family.

Built in NMOS technology at 2.5-micron dimensions, the processor has a virtual memory space defined by a 32-bit wide address. This appears to the user as four gigabytes, as the virtual memory allows the microprocessor to visit every memory location as if it were in main memory.

With this amount of virtual memory, however, the speed suffers. Philips has adopted methods of parallel functioning to help increase the speed. For example, memory management unit checks are carried out simultaneously with instruction execution.

In the 286, Intel's memory management tasks are carried out by software, so saving space. Address space of Philips' processor is divided into 64,000 segments, each capable of holding from 256 to 64K-bytes. This flexibility of the segments allows each one to comprise a complete software task. Other processors are less flexible.

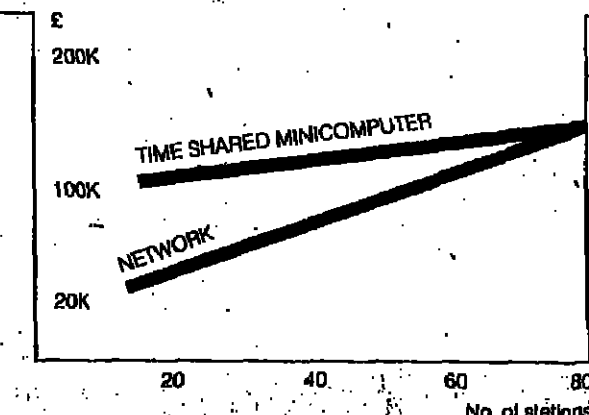
Zilog's recently announced virtual memory processors, the Z8002 and Z8004, use a paging system with fixed blocks. This wastes memory space, as many tasks could fit into smaller pages.

## Intel's 64K dRAM available

Intel's 64K dynamic RAM is available in stock from Rapid Electronics. The 2164 uses HMOS technology and comes in two versions: the 2164-5 with a maximum access time of 150 nanoseconds, and the 2164-6 with a maximum

access time of 200 nanoseconds. In a 16-pin package, it is functionally and pin-compatible with the 2116 (16K-b) device. Upgrade from 16K to 64K requires the addition of one multiplexed address line.

# One day all computer systems will be this cost-effective



Local Computer and Back-end Storage Networks (LCN/BSN) will dominate the computing scene for the next decade and beyond.

The Zynar/Nestar network qualifies as the most cost-effective configuration possible today.

Its user-orientation and adaptability have secured an installation base covering such diverse activities as banking, transport, retailing, and office automation.

When a system with this specification can pack as much power as a mainframe computer for a fraction of the cost - that's news. That's Zynar.

Local network accommodates user work stations and system resources based on the popular Apple personal computer.

Typically 10-80 nodes per network.

Multi-network configurations and gateways to other systems.

Nestar file server permits shared, synchronised access to data and programs.

Up to 66MB storage with proven Winchester disk technology.

Support for all major Apple operating systems.

Full security features including local storage, password protection and turnkey pre-selection of environment.

Built-in redundancy through modular structure using common system components.

Range of application software, including full feature electronic mail, distributed financial planning and a wide spectrum of commercial applications.

Facilitates rational use of personal workstations within organisations and ensures compatibility of data for future needs.

Unconstrained network topology.

Distributed bus arbitration.

High data rate - 250,000 bits/second.

Zynar is the European business partner of Nestar Systems Inc.

For further information please write or call: Zynar Ltd.

122/3 High Street, Uxbridge, Middlesex UB8 3JF

Telephone Uxbridge (0895) 59831

**ZYNAR**

SILICON TECHNOLOGY & COMPUTER SCIENCES

1004 1001 1000

## Computer Weekly brings you COMPEC NORTH'81

Belle Vue, Manchester  
June 23-25, 1981



## For better communication with the heart of industrial Britain

The sponsors and organisers of COMPEC are proud to present the first extension outside London of that event - the largest, most comprehensive and most visited computer show in Britain. For details, send the coupon NOW.

## COMPEC NORTH'81

To: Compec North, c/o IFC Exhibitions Ltd, Surrey House, 1 Thimbleway Way, Sutton, Surrey, SM1 4QQ. Please send us more information about exhibiting at COMPEC NORTH.

Name \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_



# Zilog's Unix version is genuine article

THE ubiquitous Unix has been introduced by Zilog for its Z8000 as a multi-user development system.

The Z-Lab 8000 Programmers' Development System, announced last week from Zilog's Cupertino headquarters, runs under an operating system called Zeus which is Zilog's own Z8000 version of the original Bell Labs Unix.

The Z-Lab system can support up to 16 users and can be used to develop code for all Zilog MPUs. The system separates hardware and software, according to Zilog. This could take advantage of the large number of tools already developed through Unix for such purposes as documentation.

Zilog paid Western Electric the full licence fee for Unix, so like the Microsoft 16-bit implementation

(Xenix), Zilog's Zeus is the genuine article.

"Zilog has extended the basic Unix system," explained UK marketing manager Phil Pittman. "There have been some enhancements to the Bell Labs original, particularly related to ease of use and the reliability of file systems."

"As far as the command structure is concerned, someone who knows Unix will not notice any difference."

Zeus supports over 60 utilities, such as self-teach aids and editing/operation aids.

"The actual software development was fairly minimal," said Pittman. "It was just a matter of recompiling Unix software to run on the Z8000." Zilog used its cross-software package, which was released a year ago for developing Z8000 code on the Digital Equipment PDP-11.

"Judging by the development time, Unix was decided upon before designing the hardware," said Pittman. "Zilog has been interested in using Unix for some time."

Initially, Z-Lab will be sold to Zilog's existing customers and component users, but Pittman expects Z-Lab to be in demand from all sorts of places as a general purpose development system.

Z-Lab is available in the US in two versions: Model 20 with 256K-bytes of memory, 24-megabyte Winchester disc drive, and two controllers, costing \$27,000; Model 30 at \$33,950 for 512K-bytes of memory and two Winchester.

Zeus is priced at \$2,000 for one user and \$4,250 for four users. Prices for the imminent European release are likely to be in the same region.

## Terminal turns into a mini

THE Mantis development system, seen by Cincom as a potentially wider selling product than its award-winning database Total, was launched in the UK last week.

"What we've done is turned a 3270 terminal into a mini," said Mantis product manager Merle Parkes. "Somebody using a mainframe terminal can get the sort of productivity and ease of use associated with minis while actually sitting at the screen."

"We've tried to put something together which would take the user all the way through the development cycle."

"Many design methodologies are good, but their problem is that they are not always easy to use with the software available, such as structured techniques which aren't applicable with Cobol or assembly languages. Mantis can be used from the design stage onwards."

Cincom will be selling the product outside its established user base, into CICS and DLI shops.

## Adaptable package aimed at solicitors

A SOFTWARE house which caters exclusively for solicitors has celebrated its ninth birthday with the launch of a new package on the Data General commercial systems range which can cope with the needs of a two-purser practice right up to major firms with 60 partners and 400 staff.

Norwel, a Manchester firm which has just opened a new London office, sees solicitors as a potentially enormous market - there are about 24,000 in the UK. There is already about £500,000 worth of Data General Nova and Eclipse kit on order for the system.

Norwel managing director Tony Welby admits to having reinvented the wheel in the process of developing an adaptable all-purpose product for his chosen market.

"One of the advantages is that we learn from previous mistakes. We can introduce things we missed last time, and cater for a specialised market because we know the topic inside out."

Welby does not see the system as a turnkey package, but as a product which can be adapted to individual needs. "It's a market where people feel they know what's right. Features have to be tailored according to needs. Of the six systems installed, for instance, five have totally different numbering systems."

The entire system, including software, hardware and training, costs anything from £18,000 (the hardware for about half of that) up to £150,000 for large firms.

## NCC directory sorts out the non-starters

THE National Computing Centre has published its Directory of Computing Software\*, based on information contained in its own database.

The directory divides software into systems and applications, and then further categorises it into about a dozen groups of systems products, including compilers, DBMSs, operating systems and programming aids. The applications software contains about two dozen groups, such as personal, graphics, marketing and medical.

The idea is that the user can go straight to his area of interest, where the summary table gives each product a single line of description including acronym, and full name, supplier, and target hardware. At the back is an index of acronyms and manufacturers' codes.

Once the user has selected suitable products from his particular category, more information can be obtained from the NCC by using the reference number from the summary table. The NCC's information service then provides standard information (drawn from its database, or the descriptive and technical information from the supplier, for a charge of 50p per abstract).

There is no attempt in the directory to make comparisons between products, and it is left to the reader to take his own inquiries further to find out such things as comparative prices, and the range, power and performance of individual products.

But it does answer the initial question of what is available in a particular field, and provides a short cut for someone seeking a product to suit an individual installation. The basic information, which includes crucial facts such as the machines a product will work on and the languages in which it is written, will in effect eliminate the non-starters and make the job of selection easier.

"Directory of Computing Software: National Computing Centre, NCC Information Services, Oxford Road, Manchester M1 7BD, 1980."

## Nested arrays in APL

THE high-level language APL has been given a major extension by the STSC, a bureau of the US Army Research Office, which is implementing the APL-PLUS system.

APL-PLUS, the system is the next January. It is a "next generation" APL, described as "the next APL" by the STSC. It is a "next generation" APL, described as "the next APL" by the STSC. It is a "next generation" APL, described as "the next APL" by the STSC.

The STSC is a bureau of the US Army Research Office, which is implementing the APL-PLUS system. It is a "next generation" APL, described as "the next APL" by the STSC. It is a "next generation" APL, described as "the next APL" by the STSC.

Leipzig Fair is one of the East's windows on the West. Paul Fisher reports

# UK firm wins £87m contract at Fair of mixed fortunes

REACTIONS of UK visitors and exhibitors to this year's Leipzig spring fair, the major East German industrial and trade show, were mixed.

Representatives of GKN were delighted at the prospect of an £87 million contract to build a foundry for the East German truck industry. The Plessey Group, on the other hand, could barely conceal its disappointment at having returned home from a third visit to the fair with an empty order book.

A spokesman for Leicester-based Rank Precision was buoyant, having secured £30,000 worth of business for spectrometers with another £100,000 in the offing. He said: "I like doing business with the East Germans and have had three times more solid enquiries than last year."

Other British businessmen complained at the preponderance of general visitors over potential buyers.

Royal Decca was happy at having clinched what was described as "a considerable order" for the first all-British satellite navigation system, the DS4. Royal Decca Trading Company, an organisation which is oriented to marine business behind the Iron Curtain.

"It's the best show I've been to for a long time," said a man from Royal Decca. Robbie Robertson, the senior man on the Plessey stand, disagreed, saying: "By comparison with other East European fairs, the exchange of information is not as open."

Plessey director P. Rogers found two out of a scheduled three meetings with East German dignitaries were cancelled. Preliminary discussions, following an East German approach, over a licensing deal worth upwards of £1 million.

Since last year the dialogue at ministerial level has involved visits to East Germany by Minister for Trade Cecil Parkinson, in March 1980, followed by a trip in November by Peter Blaker from the Foreign Office. These were reciprocated by East German sending Gerhard Beil, its state secretary for foreign trade and its minister for machine tools, Dr Georgi.

Though a commitment to trade exists at the top and the reactions to the fair are unrevealing, the trade figures are not much more help. 1980 figures show that the UK exported £93.6 million to East Germany and imported £88.1 million. These figures are distorted by UK exports of silver amounting to £40 million, countered by silver imports of £11 million.

did not come to fruition and, owing to the sensitivity of negotiations, Plessey officials were not prepared to elaborate.

"We travel," said Robertson, "in hope and hope that our hopes come true." He did not know if Plessey would be travelling to Leipzig next year.

The Plessey director was one of a party of six businessmen accompanying Lord Trefgarne, the Parliamentary Under-Secretary of State at the Department of Trade, to the fair. Lord Trefgarne spent three days in Leipzig and visited many of the 60 British stands in the main fairground.

Lord Trefgarne sounded a positive note, saying: "Prospects for an increase in trade with the GDR are very encouraging. Trade between the UK and the GDR is still below potential for two developed industrial countries. We have recognised this for some time, and my visit was part of a continuing programme of high level contacts in both directions."

At present Daro Systems Services from Oldbury in Birmingham sells the 1720 visible records computer, the 1711 electronic invoicing and accounting machine and the 1355 electronic bookkeeping machine. The 1720 sells at from £4,500 upwards and is supplied with a 100-chips matrix printer, from 2K to 32K of storage and Daro software for invoicing and accounting work. There are 200 installed in the UK.

Pride of place on the Robotron stand went to three prototype office computers, the AS110, the AS120 and the AS130. The AS110 is

Although overall trade with East Germany showed a £5.5 million surplus, the balance of trade in manufactured goods was considerably in the East Germans' favour. As a UK Department of Trade spokesman said: "Nobody knows what is going on."

**EAST GERMANY**

The major data processing presence, with a claim to have over 40 new developments on display, was the East German VEB Kombinat Robotron. (VEB stands for Volkseigentlicher Betrieb, literally translated, means "people owned plant".) According to a Robotron handout: "Our combine is represented by 70,000 workers... with millions of products and projects exported to more than 60 countries."

Some 70% of Robotron's production is exported (most to the Soviet Union), the majority through an organisation called Robotron Import/Export. Only a small proportion reaches the UK where there are four distributors handling typewriters, office furniture, drafting equipment, and small computers and accounting machines.

At present Daro Systems Services from Oldbury in Birmingham sells the 1720 visible records computer, the 1711 electronic invoicing and accounting machine and the 1355 electronic bookkeeping machine. The 1720 sells at from £4,500 upwards and is supplied with a 100-chips matrix printer, from 2K to 32K of storage and Daro software for invoicing and accounting work. There are 200 installed in the UK.

Pride of place on the Robotron stand went to three prototype office computers, the AS110, the AS120 and the AS130. The AS110 is

a keyboard and daisy wheel printer with a small alphanumeric display which is recommended for the issuing of vouchers. A variety of PROMs are promised, as are several form feeding options.

The AS120 and AS130 are supplied with 24 x 80 screens. The former is intended for screen-oriented data collection and processing and has 64K-bytes of memory and a choice of floppy discs or cassettes. The AS130 is said to combine the applications of the other two models and is supplied with a printer. It takes up to eight 256K-byte floppy discs.

All three are based on the K1520 microprocessor and the majority of components and peripherals are East German. Full hardware and software compatibility is offered. They are due for volume production later this year and it is expected that they will be marketed in the UK. If the prices are right and the customers are assured of support, they should do well.

More sophisticated is the A6401 system which takes up to eight disc memories or mag tape units. Its 1620 microprocessor is billed as a 16-bit device from Robotron but it is actually two eight-bit chips manufactured by VEB Kombinat Mikroelektronik.

The computer has compilers for Fortran and Cobol, an interpreter for Basic and a range of cross software. It can be used standalone or can be connected to the AS110 and AS120. A ticket reservation system with the unfortunate acronym of ARS/VEB was also on display.

Robotron is looking to extend itself in the OEM market with several products. These include the 1152 and 1157 serial printers, the TSD 16 thermal printer mechanism which works at 2 line/sec, a 35 to 40 character/sec daisy wheel mechanism, several VDUs and the K5200 cassette drive conforming to the ISO 3407 standard.

Attracting much attention was the EC1055M mainframe. The "M" suffix indicated a matrix module permitting floating point operations 10 to 50 times faster than was previously possible. At the show it was running under OS/MVS with 4 megabytes of main store, 100 megabytes of disc store plus mag tape units and card readers.

The 1055 was first exhibited in Leipzig in 1978 and is the biggest machine in the unified range, falling between an IBM 370/148 and IBM's 370s. It is now somewhat of a Puffing Billy by the latest Western standards, but still finds a ready market within Comecon. There is no intention to export it to the West.

A bar and paddle TV game based on a 4-bit micro, also attracted the crowds. Selling at 550 Marks (around half the average East German monthly wage, according to the British Overseas Trade Board), it was on the VEB



Leipzig's city centre is a mixture of old and new styles.

Combinat Mikroelektronik stand. This combine has 50,000 employees and concentrates on the manufacture of components. There were two 8-bit micros on show, the p-channel U808D and the n-channel U880. These, said a Mikroelektronik representative, are incorporated into the new Robotron office computers.

Optimism focused on the Tele JS teleprocessing subsystem which was being exhibited linked to the East German EC1055. Fifty have been ordered, and once it is fully tested it will be introduced to the West.

Its basic component, the EC8371.01 processor, has an instruction set of 51 instructions, five interrupt levels, an operation of over 500,000 instructions/sec and a capability of operating at up to 39 Kbps. It is synchronised by a 10-MHz clock which, through a divider circuit, produces a 100 nanosecond clock pulse and a 1.6 microsecond machine cycle.

**HUNGARY**  
The Hungarian stand featured products from Videoton. Included were the VDT 52106 and 52120 VDUs and some printers manufactured in co-operation with Data Products. The R11 system, which equates to the EC1011, featured remote job entry terminal emulation. The R10 (EC1010) is also made by Videoton and is the smallest such system in Comecon.

**YUGOSLAVIA**  
Included on the Yugoslavian stand was the Iskra TI-30 data acquisition and control system. Unrelated to the Soviet Iskra machine, it is based on the AMI S6800 family of components and has 2K-bytes of RAM and 8K-bytes of PROM. It has a system capacity of 31 remote stations for each channel and the remote station capacity is 512 single or 256 double commands, 256 set point values and data rates up to 2,400 baud.

**POLAND**  
A gloomy Polish representative



(In glasses) the Parliamentary Under-Secretary of State at the DoT, at the Robotron stand.



Robotron's EC1055 mainframe is the largest East German contribution to Comecon's IBM compatible EC range.

**has an extra instant**

The VT100 was such an immediate success that it had to build a new factory to meet demand. Now that this is completed you can get one, quite literally, off the shelf.

Many Digital firms are incorporated in the VT100, including, of course, two screen widths and smooth scrolling capability. And what comes to pass we think you'll find it very difficult to match the combination of features we provide at our price. We think you'll agree that it has been worth waiting for the best.

**digital**

King's Road, London Tel: Blandford



Setting up your own company - 4

# How merchant banks can help find the money

IN this fourth article on the financing of small computer companies we look at more sophisticated sources of finance and financial advice than those previously considered. In principle, this means looking at the services of merchant banks and finance houses.

A number of these institutions have recently been active in obtaining finance for computer companies, and the merchant banks seem once more to be playing their traditional role of finding finance for British business.

David Lowe, an executive at Robert Fleming, the merchant bank responsible for the private placing of £2 million worth of shares for Digico's parent company Spanverne Investments late last week, made the following points about the services of a merchant bank:

"We, along with other merchant banks, have a special interest in the new technologies, especially in the computer field. This is partly because we see the new technologies providing good investment opportunities, and partly because we have a historic role as advisers and providers of finance for small and growing companies.

However, we see our real role as providers of advice and assistance as a company moves from one phase of its development to another. When raising funds for small companies it is vital to get right the match between investor and company, and this is where the quality of advice can be measured by a company asking itself if

it is confident that the advice it has been given is in its own long-term interests.

"As a merchant bank we can either sell shares to institutions with which we have historic links, or arrange private or public placings of shares.

"Small companies should not be afraid to approach merchant banks although a certain amount of education is needed between small computer companies and investors. Computer companies should come to the City with an open mind, and try and appreciate the investor's point of view as well as their own needs."

A point David Lowe did not make is that for a small company interested in the booming computer markets of Hong Kong and Japan, Robert Fleming and Co has two of the oldest-established banking offices in the Far East - one in Hong Kong with Jardines, and the other in Tokyo. Connections such as these can be invaluable for contacts in those markets.

One of the most successful recent launches of a relatively small computer company on the Stock Exchange was that of ACT.

The company, based in the Midlands, was first introduced to the world of high finance by way of a limited placing on the Rule 163 (2) market. The 10p shares were offered at 95p, and within weeks had risen to 180p and finally 505p. At the moment the shares are trading at 142p (following a 2 for 1 scrip issue).

When ACT moved from the res-

tricted 163 (2) to the full Stock Exchange listing which the company now enjoys, the shares were placed by Slinger and Friedlander, an old-established merchant bank in Cannon Street.

Sir Timothy Harford was the Slinger and Friedlander executive closely associated with the ACT placing, and he made the following points about a small computer company which might be thinking about approaching a merchant bank: Firstly, a small company

should not be afraid to approach a merchant bank, but should do so before the need for finance becomes acute. It makes it much easier for a merchant bank if there is a warm-up period during which the bank and its potential client can get to know each other. This gives the bank more time to assess the client company's exact needs. A small company should pick its merchant bank with care and not be afraid to shop around.

By way of preparation, a small company should prepare a prospectus (such as outlined in the last article of this series).

Sir Timothy said that initial contact to a full listing, assuming a company approached a merchant bank while its profits were still under £200,000, could take three years.

The kind of profile a merchant bank would look for in an ideal world - which Sir Timothy readily admitted was seldom encountered - was a minimum of three years' trading, preferably five

years and profits in the region of £200,000. This should not be seen as altering his initial advice to get in touch early, but was an indicator of the point at which a merchant bank would be most able to help a small computer company.

**"A merchant bank is usually better geared to understand difficulties and to produce a viable solution."**

Sir Timothy observed that because most computer service companies were light in assets such as properties and consisted mostly of people-type assets, this made them a difficult proposition for the conventional, clearing bank type of lending.

For that reason a merchant bank

was usually better geared to understand the difficulties this posed and to produce a viable solution to the financing needs of a computer company. As an alternative to the kind of assets in which the clearer like to invest, a merchant bank would look to a computer company for growth prospects and for high profit margins.

Finally, the changes made in the Budget would have an impact on the provisions of the Finance Bill were enacted and it became possible to charge off investment specific companies against capital tax, up to a limit of £10,000.

The Bank of England has produced a useful booklet from which the above guides to types of finance have been produced. Called "Money for Business," it lists the sources of money available in the UK other than private sources. The booklet has a special section dealing with development capital and specialist financing, which will be of direct interest to small computer companies.

## Honeywell reports sales up 32% in Italy

HONEYWELL ITALIA, the Italian subsidiary of Honeywell Inc., has cashed in on the booming Italian computer market and turned its sales up 32% to \$296 million for 1980.

Honeywell Italia, which controls 20% of the Italian data processing market, ended the year with the biggest order backlog in its history.

Profits of the company,

however, were \$8 million, almost static over the two years 1979/80. The company, which last year spent \$24 million on R&D in Italy, says that it expects sales for 1981 to be about \$340 million.

# Data Communications

Whether you're investing in a small number of modems, multiplexers or large-scale network management systems, don't make your decision until you've looked into the Data Logic range. World-class quality and performance - based on renowned Intel technology - lifts our data communications equipment into the top bracket.

For information, post the coupon to:  
 Communications Products Division, Data Logic Limited,  
 29 Marylebone Road, London NW1 5JX. Tel: 01-486 7288

## -a cut above the rest

Please send full information on:

Modems ☐

Multiplexers ☐

Network Management ☐

Name \_\_\_\_\_

Position \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

# Data Logic

World's Leading in Data Communications Equipment

# Mass eyeball

Receivers, antennas, meters, OSI cards, accessories, records, books, caps, T-shirts, badges... See them at Sandown Park, venue of the first CB World Show. Read the April/May issue of CB World for 'Buzzy' speaks out. TV, CB club news, CB handles, and a colour spread of super images.

## CB WORLD SHOW

Sandown Park, Esher, Surrey  
 April 6-5th April

# CB World

April/May number out now 60p

COMPANY NEWS - 2

# Shadow over interest charges on possible £200m extra ICL loans

ANALYSIS of ICL's balance sheet following the government's decision to guarantee up to £200 million extra borrowings shows that, even if they were taken up, the company would have difficulty in meeting interest payments on them, without a substantial turnaround in its trading fortunes.

The net borrowings shown in last year's balance sheet are £116 million of medium and long-term debt plus £46 million of overdraft and short-term debt - a total of £162 million. ICL's existing facilities before the government's announcement were a total £70 million for the latter category.

If the whole of this plus the whole of the £200 million available over the next two years were taken up, total borrowings would rise to £366 million by the balance sheet for the year starting September 1982.

This would have the effect of moving the company's gearing - the ratio of its borrowings to shareholders' funds - from last year's approximate 1:1 to something like an adverse 2.7:1. The balance sheet for the year ended September 1980 had shareholders' funds at £141 million.

In its general advice to investors, the Bank of England describes a sound balance sheet as one in which equity (which basically means shareholders' funds) is twice borrowings or more.

This tends to show that the loan package underwritten by the government is not what ICL needs, and the move is seen in the City as a temporary boost while a more permanent solution is sought.

The government is continuing to put heavy pressure on GEC to get involved with ICL, possibly to strengthen its executive management, which would in turn prob-

ably necessarily involve GEC taking some sort of stake in the computer company.

Some sources speculate that at least one of the objectives might be to bring Geoffrey Cross, former managing director of ICL, back into contact with the company. Cross is currently head of one of GEC's US operations.

But if ICL takes up all its potential £200 million extra borrowings a complete takeover seems unlikely - even for a company as cash-rich as GEC.

An important factor, however, is that ICL says the confidential report prepared for the government by accountants Touche Ross before the loan guarantee commitment was made gives the company a "clean bill of health". It indicates that this firm at least believes extra debt will not simply hurt the company further.

# Memorex faces \$13m loss

DESPITE its talk about a boom in shipments of IBM-compatible disc drives, the financial problems at Memorex continue. The company in the US has said it expects to report a pre-tax operating loss of up to \$13 million for the first quarter of 1981.

Memorex hit rock bottom in the second quarter of last year with a loss of \$22 million and reported an overall loss for 1980 of \$29 million. The trouble then was blamed on factors like a decline in outright sales, the running down of old product lines and a decline in sales of audio and video products which account for about 20% of its turnover.

This time Memorex chairman, Cincay Spangle, blames the losses on problems like the strengthening of the US dollar, the costs of new packaging and production processes for consumer products and a slower than anticipated development of the market for eight inch hard disc drives.

# Start-up loans for 100 companies

BARCLAYS Bank business start-up loan so far has been used to grant funds to over 100 companies. The fund, set up last September, has been used to provide funds to eight companies in the computer sector.

The average loan under the scheme so far has been £30,000 and total lending has been well over £3,000,000.

The business start-up loan does not require the borrower to put up any collateral other than a commitment to repay Barclays a share of the royalties on sales.

The bank expressed surprise at the volume of lending they have been able to approve under the scheme.

According to a spokesman, the bank had received a surprising number of quality proposals, particularly from the computer sector.

# Package for brokers

THE City specialist software and bureau company Consultants (Computer and Financial) Ltd announces the sale of a complete financial package to the stockbrokers William de Broe Hill Chaplin and Co.

The package, described as a fully integrated stockbroking control accounting and ledger system, is worth over £100,000 in revenues to C&CF.

The system will run in-house at the brokers and will be used to process William de Broe's considerable international business.

# NEB £1m fund aimed mainly at computers

THE National Enterprise Board has launched another loan fund aimed generally at the computer and high technology industry.

The fund, with about £1 million at its disposal, aims to provide loans of up to £50,000 to small companies which have exhausted their existing sources of funds.

Interest charged by the NEB through Oakwood Loan Finance will be 2% above MLR and there will be no capital repayments in the first five years.

The loans will be unsecured, but the NEB will expect a negotiable option to take an equity stake in the company. This stake will normally amount to a right of purchase for up to 20% of a company's shares.

Where a company wishes to buy itself out of the NEB option, the cost will normally be 20% or two to three times a company's profits in the fourth and fifth years of the loan.

This loan scheme is not specifically intended to provide start-up capital, although the NEB says that start-up situations will be considered.

For start-up and venture funding the NEB would expect to provide funds through the Anglo American Venture Fund, launched at the end of last year.

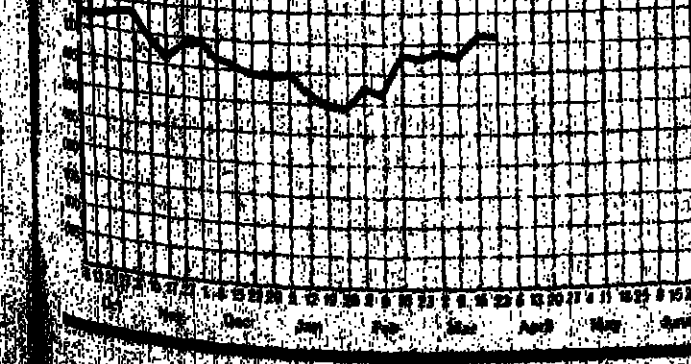
The NEB says that they have already had a big response from small companies, both to the Oakwood fund and the Anglo American fund.

# CW SHARES TABLE

Share	London Stock Exchange	Price	Index 1000 Change	US Stocks	Price	US Stocks
IBM Corp (1980)	125	125	0	IBM Corp	125	125
Apple Inc (1980)	125	125	0	Apple Inc	125	125
Microsoft Corp (1980)	125	125	0	Microsoft Corp	125	125
Oracle Corp (1980)	125	125	0	Oracle Corp	125	125
... (many more rows) ...	...	...	...	...	...	...

The table shows the closing prices in America on Thursday and the mid-day prices on Friday in London. The share index is based on the prices of the UK companies in the table. Prices and Losses have been adjusted where necessary.

Prices listed under the United Securities Market or under Rule 163(2)(a).



# ON YOUR MARKS!

## AND GET SET TO UPGRADE YOUR DECWRITER TO A VERSATILE 1200 BAUD TELEPRINTER

# Fungus Computer Products, leaders in the field of British Manufactured DEC® compatible hardware products.

## The F120 PLUS Terminal Controller from Fungus upgrades your LA36/35 DECwriter to a 1200 baud teleprinter and provides the following features:

\* DEC & DECwriter are trademarks of Digital Equipment Corporation

165 cps printing speed.  
 Bi-directional printing.  
 Double wide characters.  
 80-9600 Baud operation.  
 256 character buffer.  
 X-on X-off control.  
 Self test mode.  
 Variable page length.  
 Variable form length.  
 Left and right hand margin setting.

Horizontal tabs.  
 Top of form.  
 Top and bottom form margins.  
 Character view mode.  
 Character density setting.  
 EIA or 20mA interface.  
 Full and half duplex.  
 Auto line feed.  
 Here is.  
 Optional:  
 User programmable characters.

# Fungus

## COMPUTER PRODUCTS LIMITED

No. 1 Westmead House, 2nd Floor, Teall Street, Wakefield, West Yorkshire, England. Tel: (01924) 50274/5/6. Telex: 597644







## PROGRAMMERS PAGE

This week Michael Hunt, of MSA International Inc, urges less attention be paid to clumsy in-house software

# Package up all your accounting troubles

IN the 1960s most mainframe systems were cost justified primarily on the basis of expected benefits in financial and accounting applications. Now, however, the computer is rightly being regarded as a corporate resource which must earn its bread and butter in a variety of activities that are at the core of an organisation's success, such as order entry, production management, stock control and customer support systems.

As the price of computing power has fallen and as the benefits of online systems and distributed processing have grown, the DP department has come under increasing pressure from line managers to satisfy their particular needs. At the same time, the traditional financial accounting tasks have to be maintained through a variety of hardware upgrades and legislative changes.

Scarce DP resources can be tied up in wrestling with accounting

software that has become clumsy and difficult to modify as a result of years of ad hoc development. So DP managers throughout the world are growing increasingly aware that their resources should be focused on more front-line applications.

The solution found by many is to package up their financial and accounting problems into good, well supported software products which free staff to work on new and more urgent developments.

Some long-in-the-tooth DP managers might regard this approach with a little scepticism. At an early stage in their careers, they might have had their fingers burnt by a software product which offered the earth but delivered a handful of rubble.

In the early days, hardware was expensive and there is no doubt that many early software products failed to meet real user needs. In addition to being relatively expen-

sive compared to in-house development, they were poorly designed and inflexible. The users either had to modify their procedures to fit the straitjacket of the product, or a costly development would have to be entered into to "tailor" the product to particular circumstances. This tailoring often negated the whole benefit of using a standard off-the-peg solution.

The software product picture in the 1980s, however, has changed significantly from a decade ago. The changes have meant that software packages are now accepted as an intrinsic part of the DP armoury rather than as a branch away from mainstream developments.

A recent survey by the Association of Data Processing Service Organisations in the US found that in 1979 only 5% of installations used proprietary software but that by 1985 this figure will explode to about 95% of installations. Al-



Michael O. Hunt is international vice-president of MSA International Inc.

though the US has led the use of these products, the same growth pattern is being experienced in Europe and the rest of the world.

What has led to software packages developing from being an option of interest to a minority of DP departments to its new status?

There are five main reasons: Growing pressure on DP re-

sources; new economic forces; better software design; the growing maturity of the suppliers of software; and, in accounting software, the need for reliable auditing controls.

have already highlighted the pressures familiar to every DP manager: Rapid technological changes, particularly in hardware, demands for the implementation of new applications and shortage of skilled staff. Any product that can satisfy a particular applications need, particularly in routine tasks like accounting which need regular enhancement and alteration, is good news to the DP manager. It means that computing power should be able to be applied to new areas and should therefore assist in fighting the battles of our current tough recession.

The economic factors that have tilted the balance towards software products have also been well rehearsed in the computer industry. Hardware prices have tumbled, while software and people costs have gone up.

When hardware prices were relatively high and software bundled into the hardware cost, it was difficult to justify significant extra expenditure on a separate software item. Given the relatively low cost of software development at the time, it was easier to justify expenditure on in-house developments, particularly as the software products market was suffering from some serious teething problems.

From the time IBM unbundled software in the early Seventies, software became a more clearly identifiable item. Now software is seen to be a major part of total systems costs. Even senior non-DP managers have become aware that software is a hard cost, although it is an "intangible" commodity.

Any saving in software represents a far greater cost benefit now than it did five years ago. From our experience at MSA, we estimate that a good general ledger accounting package should cost about 20% of the money that would be invested in an in-house development when staff, user management time, design, testing, and integration, etc are taken into account.

The main fear with software products is that a generalist system will be less efficient than one tailor-made to specific needs. There are two decisive factors in determining whether such fears are justified: the uniqueness of the application and the design of the software product.

If the application has many characteristics unique to a particular organisation's operations, then an in-house or custom-built system is more likely to be justifiable. A clear distinction must be made, however, between variables that can easily be parameterised in a general system and more fundamental characteristics.

Provided a software package is designed from scratch so that users can tailor it to specific needs by choosing simple parametric options, then it is possible to turn a general system into an efficient tailored solution for certain applications. The MSA General Ledger and Financial Information and Control System, for example, has proved to be applicable in over 30 countries, despite varying fiscal and legal requirements.

The use of parameter-driven software means the user can select specific options without requiring any software rewrite. Before selecting a software product, the DP department should work closely with the end user to ensure that a sufficient range of options is available to meet practical needs both now and in the future.

The potential for long-term development is also an important design criterion, particularly for those that online and distributed processing is becoming more significant even in the strongholds of batch processing, like general ledger accounting. A packaged solution should be capable of coping with both in terms of adding new capabilities and in being integrated with other related applications.

User perceptions of applications software have matured in the last few years at the same time that software products industry and its user base and range of experience. Users and DP departments should now be able to undertake their evaluation criteria for software products more comprehensively in the light of finding suitable solutions.

Factors such as the breadth of range of support and training offered, the financial stability of the supplier, size of existing base, investment in future development, etc as well as questions about price and performance.

Any product that can satisfy a particular applications need, particularly in routine tasks like accounting which need regular enhancement and alteration, is good news to the DP manager.

development is also an important design criterion, particularly for those that online and distributed processing is becoming more significant even in the strongholds of batch processing, like general ledger accounting. A packaged solution should be capable of coping with both in terms of adding new capabilities and in being integrated with other related applications.

User perceptions of applications software have matured in the last few years at the same time that software products industry and its user base and range of experience. Users and DP departments should now be able to undertake their evaluation criteria for software products more comprehensively in the light of finding suitable solutions.

Factors such as the breadth of range of support and training offered, the financial stability of the supplier, size of existing base, investment in future development, etc as well as questions about price and performance.

Any product that can satisfy a particular applications need, particularly in routine tasks like accounting which need regular enhancement and alteration, is good news to the DP manager.

development is also an important design criterion, particularly for those that online and distributed processing is becoming more significant even in the strongholds of batch processing, like general ledger accounting. A packaged solution should be capable of coping with both in terms of adding new capabilities and in being integrated with other related applications.

User perceptions of applications software have matured in the last few years at the same time that software products industry and its user base and range of experience. Users and DP departments should now be able to undertake their evaluation criteria for software products more comprehensively in the light of finding suitable solutions.

Factors such as the breadth of range of support and training offered, the financial stability of the supplier, size of existing base, investment in future development, etc as well as questions about price and performance.

Any product that can satisfy a particular applications need, particularly in routine tasks like accounting which need regular enhancement and alteration, is good news to the DP manager.

development is also an important design criterion, particularly for those that online and distributed processing is becoming more significant even in the strongholds of batch processing, like general ledger accounting. A packaged solution should be capable of coping with both in terms of adding new capabilities and in being integrated with other related applications.

User perceptions of applications software have matured in the last few years at the same time that software products industry and its user base and range of experience. Users and DP departments should now be able to undertake their evaluation criteria for software products more comprehensively in the light of finding suitable solutions.

Factors such as the breadth of range of support and training offered, the financial stability of the supplier, size of existing base, investment in future development, etc as well as questions about price and performance.

Any product that can satisfy a particular applications need, particularly in routine tasks like accounting which need regular enhancement and alteration, is good news to the DP manager.

development is also an important design criterion, particularly for those that online and distributed processing is becoming more significant even in the strongholds of batch processing, like general ledger accounting. A packaged solution should be capable of coping with both in terms of adding new capabilities and in being integrated with other related applications.

User perceptions of applications software have matured in the last few years at the same time that software products industry and its user base and range of experience. Users and DP departments should now be able to undertake their evaluation criteria for software products more comprehensively in the light of finding suitable solutions.

Factors such as the breadth of range of support and training offered, the financial stability of the supplier, size of existing base, investment in future development, etc as well as questions about price and performance.

## OP SPOT

## Sixty ops who run the roll-call of a nation

WILLIAM the Conqueror did it and called it the Domesday Book. Since 1801, it's been done at the beginning of each decade, with the exception of the 1940s. This year the forms have already been handed out for completion next Sunday April 5, and collection by the following Thursday. Census day is with us again and we all have to submit ourselves to the big count.

In the words of the 1800 Census Act, the aim is to take "an account of the population of Great Britain, and of the increase or diminution thereof."

Times have changed and that account has become more exhaustive. At the computer site in Titchfield, Hampshire some 60 operations personnel will be tending the processing of a mass of information.

The 1911 census saw the introduction of punched cards and of mechanical sorting. The 1961 census was the first to be computerised and by 1971 an ICL 1904A was the workhorse. This year two ICL systems are coping with the load.

The census collects information on everybody in the country. The current form contains 21 basic questions, which is eight fewer than in 1971. Over 50 million heads are being counted, along with the dwellings they live in, the way they get their daily bread and the way they travel.

Census information is particularly useful for the division of the current annual £20,000 million Home Support Grant and local authorities are a major customer. The results will be available in full by summer 1984 although the first results will be out before 1982.

Statistics, better statistics, so naturally there is an abundance of big numbers to boggle your mind. The total price for the head count is an estimated £44 million which, according to the OPCS, works out at 8p per person for each year since the last survey. Put that way it sounds cheap.

More than 115,000 people will have temporary work distributing and collecting 20 million forms. Of these, 107,000 are known as enumerators, and will be paid £124. In Liverpool, a temporary force of 1,500 data preparation staff code the forms on to hard discs for subsequent processing near Titchfield.

Such is the concern for security, a coding office has been established at the Titchfield site to ensure that the Liverpool code does not see forms relating to their own neighbourhood.

At the peak of processing, which is needed from May onwards,

once the data preparation has been finished in Bootle, there will be 60 operations staff.

Among civil servants working in DP there is a sense of divided loyalty, an uncertainty about whether they are bureaucrats or DP people. This is particularly the case with the older Civil Service hands.

Principal production manager Ron Birch has been involved with computers since 1964 and says, "I'm slowly considering myself a DP person." His assistant, Bob Dunk has been a civil servant for 29 years, the last 12 involved with computers. He says, "It wouldn't break my heart to move."

Analysts have never been civil servants, but those in the ops department are. Their grades reflect Civil Service grades and on the bottom rung is the data processor (DP) whose position equates to a clerical assistant. DPs work with special data processors and SDPs are the fully-fledged operators.

Colin Hardy is an SDP who does not regard himself as a civil servant. "Lots of us in operations think we're separate. We don't see much of the programmers and anyway - we work shifts," he says.

At present, a two-shift system is being worked for five days a week, from 7.30 am until half past midnight. The extra half-hour beyond midnight dates back several years to an agreement that a 20% shift premium is earned if an excess of four hours is worked after 8pm.

From the beginning of June, there will be a three-shift system for round-the-clock coverage. The current complement of 15 operations personnel to a shift, including file librarians, will be increased to 20 per shift.

Some 30 extra DPs and SDPs will be required from the beginning of June. Eleven SDPs (operators) have been recruited either from DPs or as volunteers from clerical officers.

A general complaint is that all are stuck with Civil Service procedures demanding a minimum amount of time in one grade before promotion can be considered.

A roll-call of the nation involves some monstrous number crunching and the computer room is so large and so packed that it makes the inside of the Tardis appear cramped. In one corner is a COM recorder, and in the opposite corner a 7903 console processor and Racal modems servicing 28 terminals at Titchfield and the OPCS headquarters in London.

Dominating it all is rank on rank of ICL equipment - £1.25 million worth of blue grey 1906S boxes,

lined up with £1 million worth of 2960. The 2960 is due to go live within weeks and will handle statistical work.

The 1906S was installed in 1975, as a replacement for the 1904A. It has 256K store and among its peripherals are 16 mag tape units. There are over 25,000 tapes with records.

There is no intention to desert tape for mass storage for, as Ron Birch says, "it is the most economical way for data to be stored in a serial fashion."

The Titchfield site, with its peculiar cyclical work flow, provides an essay in mainframe computer developments by the decade. The COM recorder shows a commitment to the latest in technology and it will be interesting to see what hardware is in operation in 1991.

The last census involved the production of 20 million cards but these have now been done away with. An Auto Edit facility means that data will be edited differently with software taking over from clerks.



A few of the ops staff who will be processing the census forms. They are (left to right): Ian Whittington (DP), Geoff Sharvell (DP), Nigel Stocombe (DP), Las Purney (executive officer/file librarian), Paula Fawcett (DP), John Coates (higher executive officer/shift leader), Bob Dunk (senior executive officer/ops supervisor) and Ron Birch (principal production manager).

## Ohio are now in Britain with their small business computers. You were wise to wait.

Ohio Scientific - one of the leading suppliers of microcomputers in the U.S. - have supplied more Winchester-based small-business general-purpose micro-computer systems than anyone else in the industry.

Now OS (UK) is here in Britain. Set up in Slough with a full service base, all the equipment you could ask for, more expertise than you'll ever need, and an eagerness to do for small/medium businesses here what they've done for small/medium businesses in America.

Ohio Scientific's C2-OEM is designed to be the cost-effective solution to business and industrial applications which can effectively utilize typical micro-computer execution speed. The C2-OEM benefits from Ohio Scientific's years of volume microcomputer production experience yielding an extremely competitively priced medium performance microcomputer. The C2-OEM utilizes the popular 8502 microprocessors operated at 1MHz clock speed in conjunction with 48K of 450 NS Dynamic RAM memory.

The C3-D mates the electronics of the popular Challenger III triple processor microcomputer system with the cost effective 8" Winchester disk. The C3-D features

the three most popular microprocessors - the 6502A, 68B00 and the Z80A. When operated in the 6502 processor mode, the machine executes instructions approximately twice as fast as competitive microcomputer systems. The C3-D incorporates 52K high speed static RAM, serial I/O port, bootstrap and diagnostic firmware, 8" floppy disk for transport and backup as well as an 8" Winchester. The C3-D comes complete with OS-65U disk operating system which is optimized for use with the Winchester hard disk and includes a fast 9-digit BASIC by Microsoft.

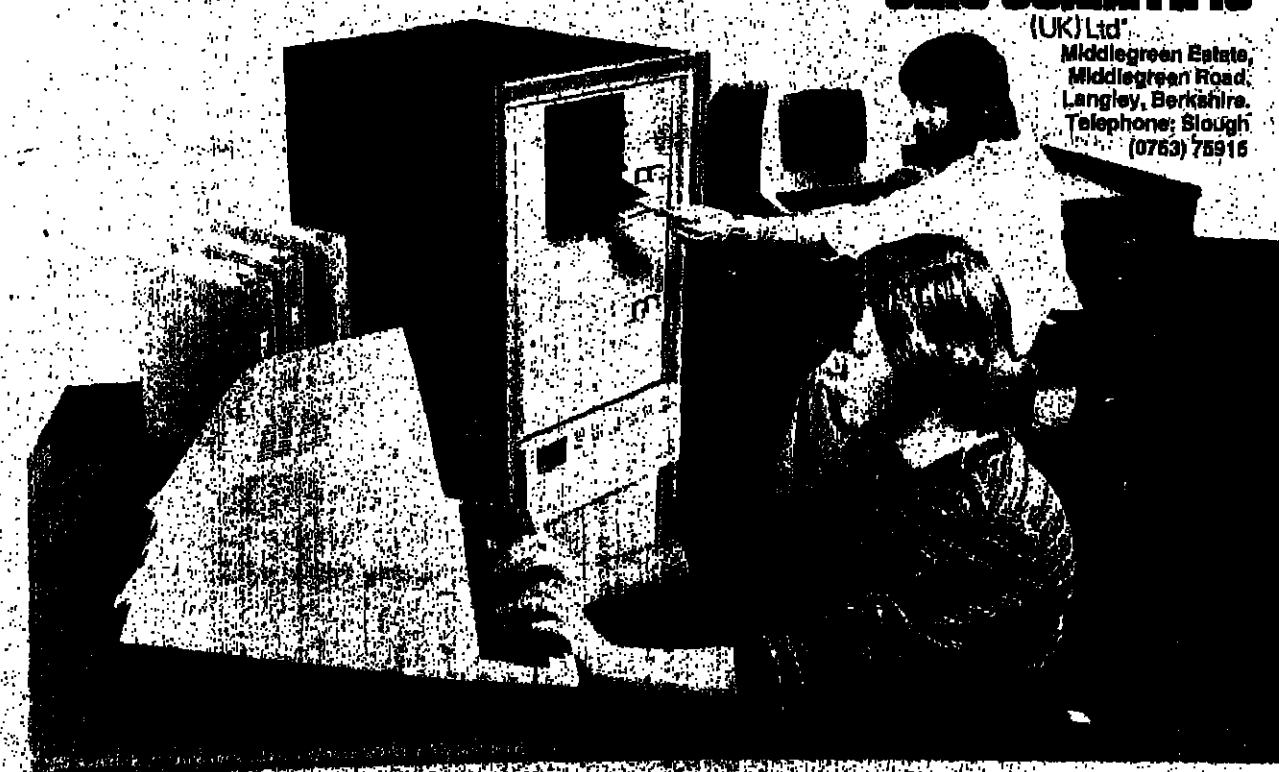
The C3C is the most economically priced 38 megabyte hard disc systems available in the UK. CSC qualities include three processors, 6502, 6800, and Z80 with software control and full multi user and multi tasking facilities, with floppy disk or Alloy Engineering tape drives. CSC is "state of the art" in microcomputing.

All systems come with fully operational software and languages include BASIC, FORTRAN, and PASCAL with CP/M (R) on C3 series machines. Complete application software also available.

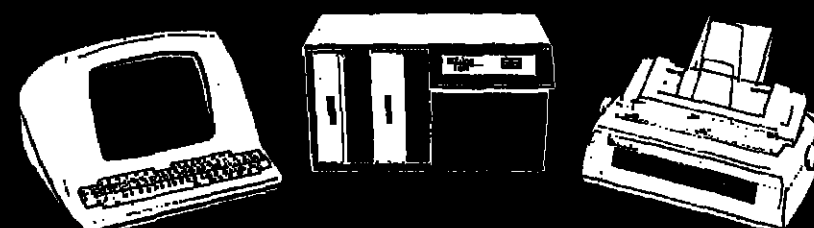
If you want the biggest backing a small business could ask for, call Alan Davies on (0753) 75915.

## OHIO SCIENTIFIC

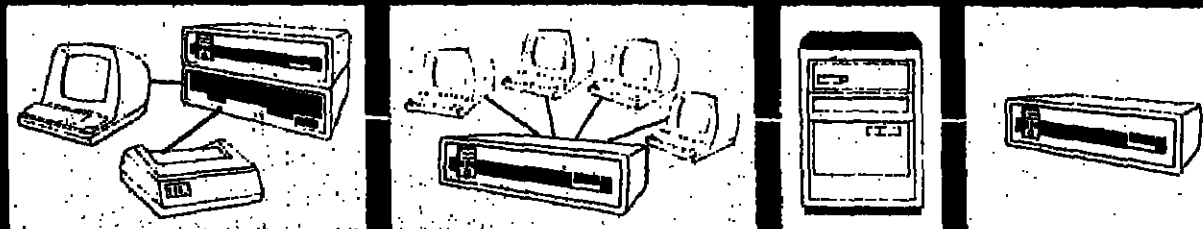
(UK) Ltd  
Middlegreen Estate  
Langley, Berkshire  
Telephone: Slough  
(0753) 75915



## START SMALL



## GROW BIG



# With Ziilog SYSTEMS

The modular design of Ziilog's MC2 series of microcomputer systems allows you to start small and grow big - in a variety of directions. Whether you're a dealer or a software developer, OEM or end user.

START SMALL with Ziilog's inexpensive but fully supported MC2-1 floppy disk system and accompanying software, designed for the first-time small business user. Add software from a wide range of packages, including word processing and accounting, to increase the machine's storage with built-in cartridge disks.

GROW BIG with Ziilog's Z-NET local network systems. Start with a 2 Mbyte floppy disk MC2-2, based on Ziilog's own Z-80A processor. Add the network interfaces and connect your microcomputer systems to allow sharing of data, printers, modems and other expensive peripherals. Allow yourself flexible growth without loss of performance, and remember that Ziilog promises gateways to future local network standards.

Ziilog's General Systems products are based on Ziilog's own Z-80 and Z-80A processors and have enviable records of reliability. Ziilog's

own support and service organisation, ensures that your investments in hardware and software are protected as your business grows.

THINK BIG. Fill in the coupon and let us show you how we can help together.

Write to: Ziilog (UK) Ltd, Watlington, Oxford OX1 1DU Tel: (0628) 38131

Please send me information on the selected range of Ziilog systems

Name	
Company	
Address	
Postcode	
Telephone	
System chosen	
Other comments	

## PUZZLER

A COUPLE of years ago I discussed the "prime-sum" 567, which is the smallest total that can result from forming primes using the digits from 0 to 9, once only. (The two possible sets are: 2 + 3 + 5 + 67 + 89 + 401, and 2 + 5 + 7 + 61 + 83 + 409.)

Now, an acquaintance informs

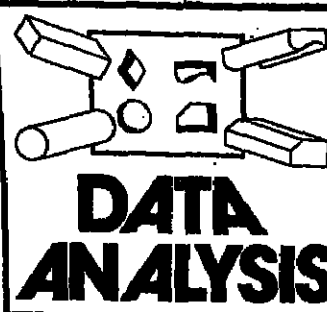
me that this total may be 507 if the "once only" is removed, to allow any digits to be present, in any of the ten from 0 to 9, as many times as you like.

Finding the appropriate primes, to sum to 507, is a nice little problem for the

column. See page 30 for the solution.

Now, an acquaintance informs





# Making the transition from the old system to the new

ONCE the database and the application have been designed, attention must be given to how the existing systems can be converted to or interfaced with the new system. This task is known as transition analysis; during a transition period both systems are likely to be run in parallel. The main stages of transition analysis are as follows:

- Draw data models of the existing systems and hence produce definitions for the data items in the existing files.
- Identify the functions supported by the existing systems, by analysing specifications of the batch and online transactions.
- Compare the existing data with the required data.
- Compare the existing functions with the functions covered by the new system.
- Draw up a conversion strategy, which defines the interfaces required, the conversion programs required, the changes needed to existing systems and the timing of all these tasks.

First, data models have to be drawn. In our experience, the entity model of the systems to be converted will be different from the one produced by entity analysis. This is not a sad reflection on the standard of systems analysts of the past, but is the result of restrictions which operated when the systems were designed.

**Duplication over more than one system causes the most headaches because it ends up as a political problem.**

1. The areas under analysis were usually more severely restricted to applications. In other words, there are likely to be several old entity models for the one new entity model.

There is also likely to be a good deal of duplication of attribute types of entity types within other entity type records, simply because the analyst did not recognise that he was dealing with entity types, since his view of the business was so narrow.

In Figure 1, the existing hospital systems are shown. There is an Out-Patient Scheduling system, an In-Patient Scheduling system and an Illness Statistics system. As can be seen, "Patient" is duplicated in each system.

In Figure 2, the existing hospital systems are shown. There is an Out-Patient Scheduling system, an In-Patient Scheduling system and an Illness Statistics system. As can be seen, "Patient" is duplicated in each system.

At this stage, no account has been taken of the file structures of the existing or proposed systems or the actual programs used to implement the functions. The next stages in transition analysis make the comparison of existing data with required data.

After the first two stages, the analyst is provided with two vital pieces of information: which entity types are not covered by the system; the definition of the attributes in the existing system.

Once these two pieces of information have been derived, the database and the existing file structures can be compared and a table drawn up, as in Figure 2, to show where there is correspondence, and where there is not.

identify the functions supported by the existing systems.

This is not as difficult a task as drawing the entity models for the existing systems, because a system specification is usually available which describes the functions, even if the description may require some analysing to work out what the functions in the old systems are. The study of the systems specification will also enable the analyst to define the derived attribute types within the existing systems.

Existing system	New system
File name OP-APPTMT OP-APPTMT OP-PATIENT OP-APPTMT OP-PATIENT IP-OPERATION IP-ATTEND	Data item name OP-CLIN OP-APPT DATE OP-NAME OP-NAME OP-DOB OP-DOCNAM IP-DOCNAM IP-DOCNAME
File name H-CLINIC H-APPTMT H-PATIENT H-PATIENT H-PATIENT H-DOCTOR	Data item name CLINICNAM APPTDATE PATENAME PATENAME DATEBIRTH DOCTNAME

Figure 2

The results of these two stages are the entity model for the existing systems, a list of the functions supported by the existing systems and a definition of the attribute types in the existing systems.

At this stage, no account has been taken of the file structures of the existing or proposed systems or the actual programs used to implement the functions. The next stages in transition analysis make the comparison of existing data with required data.

After the first two stages, the analyst is provided with two vital pieces of information: which entity types are not covered by the system; the definition of the attributes in the existing system.

Once these two pieces of information have been derived, the database and the existing file structures can be compared and a table drawn up, as in Figure 2, to show where there is correspondence, and where there is not.

There are likely to be endless problems associated with trying to decide which existing data items should be used as source data for the database. None of these are unsolvable, but in many cases the situation has to be a compromise based on a user agreeing to check the results for accuracy.

What problems are there likely to be?

- Data items whose values are simply wrong. In other words, the items may be present, but their contents are of dubious worth because they are unique to a clinic, but patients would be a problem, as a patient can visit more than one clinic and also attend for operations. The same patient record could thus occur within the files of all the different systems.

Which implementation of the systems or which system thus holds the correct details of the patient?

Hallam Clinic system may have a record which states that J. Smith is male and was born on 10/10/70, but Brightside Clinic system has a record which says he is male but born on 10/12/70, and Hilltop's record says "he" is female!

Again, there is no simple solution - the users have to fight it out for themselves. The best solution we can hope for is to show them the alternatives and values that have been collected and let them decide.

Sometimes data items are embedded in programs. This comes about when the original system did not recognise the value of a data item and defined it only in the working storage of a program - the data item then only exists for the duration of the execution of the program. The only solution is to amend the program to output the data item onto an interface file.

Systems are still being written which have no naming standards for the data items, either within the records or within the programs. For example, patient name may be called Op-pname in one record type, G-name in another, AK66 in a program, Tworkout in another.

This makes analysis of the system and the drawing of a model almost impossible. It can result in the data items being undefinable because documentation has been lost, or time is too short to spend hours wading through the mechanics of a program to work out whether Tworkout really is the patient name.

Again, the user may have to provide the data to fill the gap left by bad system design. If naming standards are adopted and one name for one attribute type used in all programs and record types the job is made much easier - for example, if the system team has used Pname as the patient name and made it unique within a file by using a suffix or prefix, such as Op-pname, Ap-pname.

Next the existing functions must

type occur in different existing systems, where the entities within that entity type are represented also within different implementations.

For example, appointments would cause us no problems as they are unique to a clinic, but patients would be a problem, as a patient can visit more than one clinic and also attend for operations. The same patient record could thus occur within the files of all the different systems.

Which implementation of the systems or which system thus holds the correct details of the patient?

Hallam Clinic system may have a record which states that J. Smith is male and was born on 10/10/70, but Brightside Clinic system has a record which says he is male but born on 10/12/70, and Hilltop's record says "he" is female!

Again, there is no simple solution - the users have to fight it out for themselves. The best solution we can hope for is to show them the alternatives and values that have been collected and let them decide.

Sometimes data items are embedded in programs. This comes about when the original system did not recognise the value of a data item and defined it only in the working storage of a program - the data item then only exists for the duration of the execution of the program. The only solution is to amend the program to output the data item onto an interface file.

Systems are still being written which have no naming standards for the data items, either within the records or within the programs. For example, patient name may be called Op-pname in one record type, G-name in another, AK66 in a program, Tworkout in another.

This makes analysis of the system and the drawing of a model almost impossible. It can result in the data items being undefinable because documentation has been lost, or time is too short to spend hours wading through the mechanics of a program to work out whether Tworkout really is the patient name.

Again, the user may have to provide the data to fill the gap left by bad system design. If naming standards are adopted and one name for one attribute type used in all programs and record types the job is made much easier - for example, if the system team has used Pname as the patient name and made it unique within a file by using a suffix or prefix, such as Op-pname, Ap-pname.

Next the existing functions must

## Section II - Part 4

of our series describing a system design methodology  
by Rosemary Rock-Evans

available as to how detailed comparison is, and to what the purposes listed are suited.

It may be necessary to produce quite detailed functional analysis of the old systems where the procedures of the systems and data items of the attribute types were complex.

The final phase of transition analysis is the drawing up of a conversion strategy, or plan of action. This should contain the following information as a minimum:

- Extra information may be required depending on the type of conversion, training required, etc.

**The user may have to provide the data to fill the gap left by bad system design.**

1. The interfaces required between the existing system's files and the new database files, specified in terms of attribute types.
2. The data items required from other sources and the method of acquiring that data (data capture).
3. The parts of the existing systems which must be retained to provide input to the new system and the amendments which will be needed to the systems as a result.
4. The amendments required to the existing systems to cater for the conversion process.
5. The new programs required to perform the conversion. These will include any programs required to actually convert the format of the data items and the codes. A dictionary can often be used with the process.
6. The strategy for providing the new system: parallel running, direct changeover or pilot running.
7. The partitioning of the conversion - which functions are going to be implemented as one go, whether the conversion will be in each implementation of the existing system or by all systems running on. The results of the functional analysis will help in this respect, as the two can be compared to see the groupings which have a minimum of interfaces with other systems.
8. The timing of the conversion - this is very important as it is running, for instance, may be possible over any length of time. The decisions are likely to be based on the resources available: people, machine time, volume of data, etc.

9. The strategy for obtaining from the user's viewpoint, what the user will be expected to do.

All the above tasks may be completed for the clerical systems (the system). In other words, the conversion of both the computer system and the clerical system must be considered.

Both entity analysis and functional analysis are used to develop a strategy for conversion of the existing systems to the new database. In the next article the dictionary will be discussed as a tool for analysis and design.

The Data Analysis methodology was developed in CACI by Palmer.

## Industry veteran collects his OBE

DAVID CAMINER, who was one of the few non-administration people from the computer field to be awarded an OBE in the New Year Honours List, was invested last week.

Caminer began working with computers in the late 1940s when, as manager of systems research at J. Lyons catering company, he selected and delineated the first application for the Leo computer. It is thought that this was the first routine commercial computer application in the world. When in the Fifties, Lyons became an equipment supplier and Leo Computers was formed, Caminer became a director.

Amid a succession of mergers that culminated in the creation of International Computers, Caminer continued to hold top-level posts. As project leader for ICL he was responsible for installing a large computer system and communications network for the BBC and getting it into operation, until the Community took over responsibility for the system in February last year. He is now an independent consultant.

Dr Norman Schofield has been appointed technical director of Compeda. He was previously manager of the company's industrial engineering division.

Stephen Raine has been appointed senior assistant county treasurer and head of computer services at North Yorkshire County Council. He previously served as computer services and software support manager with the Authority.

John Auton has been appointed branch manager, enterprise division, at Nexos. Before joining the company he was national sales manager with Canon Business Machines. Keith Childs has been made branch manager at the company's sales office in Manchester. He has been with the company for just under a year, and before that held sales positions with Nixdorf Computers and Sab Scan.

George Isaacs has been appointed vice-president of European operations at Aydin Controls. He will continue in his present job as

1 College Gardens, Belfast, 8.00. Communication aids for the handicapped. BCS Edinburgh branch. Mountbatten Building, Herriot Watt University, Grass Market, Edinburgh, 3.30.

Visit to Guinness at Park Royal: Computer control of the brewing process. BCS Kingston branch. Numbers limited, so apply to GFS Bennett on 01-5171.

Computer typesetting/use of computers in printing. IDPM Essex branch. QB Printers, Sheepen Place, Colchester, 7.30.

Role of DP management in an automated office, branch AGM. IDPM East Midlands branch. Derby College of Technology, Wilmorton, Derby, 7.30.

Meeting. IBM Guide Set Group. BCS Birmingham branch. IBM, Basinghall Street, London EC2. Details Alan Peck, tel: 01-828 8104.

Does the Chip Mean the Chop? BCS Merseyside branch. Faculty of Science Lecture Theatre, Liverpool University, 6.00.

Second London Computer Fair. Association of London Computer Clubs. North London Polytechnic. Details 01-607 2789.

Experience with new database products. BSC Database Specialist Group. Room 166, New Engineering Block, University College London, 200.

Air traffic control. BCS Belfast branch. Queen's Common Room,

Freeman: Tunkowska

Gordon Freeman has been appointed technical marketing manager of Computervision Europe after 10 years with the CAD Centre in Cambridge.

Jonathan Bachellier has been appointed director of European operations at Athena Inc. He joins the company from Nishus in France where he was responsible for OEM and distributor sales in Southern Europe and North Africa.

George Ellis, formerly sales executive with Control Data, has been appointed marketing manager at Lambert Computing.

Anna Bailey has joined Adroit Systems as systems manager. She was formerly senior systems analyst at British Olivetti's data processing division in Coventry.

David Green has joined ADDS as general manager. He was formerly general sales manager at MAI UK.

Running on 16 different machine ranges

Over 50 installations in industry, commerce, Government and Research

Relational databases are easy to understand and easy to use - but are they practical?

To find out more, write or phone quoting ref. RA/2, to:

Colin Banfield  
Logica Limited  
68 Newmarket Street  
London W1A 4SE  
telephone (01) 637 9111

the proven  
Relational Database  
System.

## Racal-Milgo adds to board

TWO appointments have been made to the board of Racal-Milgo. Alan Gill becomes director of the company's UK division and John Babb marketing director of Racal-Milgo Ltd.

Gill spent eight years with Cable and Wireless as radio and line transmission engineer, before moving to BOAC where he worked on the planning and installation of the airline's Boeinger real time seat reservation systems. He joined Racal-Milgo in 1970 as sales engineer and was made UK sales manager in 1975.

Babb is a physics graduate, whose first industrial post on leaving Nottingham University was with Standard Telephones and Cables. In 1961 he joined Varian Associates as a cable engineer with the company's instrument division, where he stayed for 14 years in various management positions. He joined Racal-Milgo as export sales manager in 1976, and last year was promoted to marketing manager.

Geoff Gibbons has been appointed package marketing manager at Ventek Computers. He has been with the company for seven years, serving as regional support manager in the North of England.



JOHN BUTCHER, MP for Coventry South West and vice-chairman of the All Party Committee on Information Technology, opened a Computervision in Halesowen, West Midlands. The store is owned by ACT (Holdings), the UK computer bureau, and aims to sell "everything the serious computer user would want," from complete business systems to stationery ranges, ribbons and printwheels for printers, word processors, and books, magazines and manuals. Among the staff are analysts, programmers and electronic engineers to give advice to users and potential customers. Computervision is at Shenstone House, Dudley Road, Halesowen.

## PCL names senior team

BUREAU P&O Computer Services (PCL) has announced plans to increase the staff in its consultancy division by over 60% during the next year.

To cope with expansion, and an increasing demand for the company's services, several senior management appointments have been made. Trevor Clarke, formerly head of the consultancy division, is now managing director of

the company. Ian Morris, who was DP manager, has been appointed head of the operations division. Head of the consultancy division is former marketing and consultancy manager Brian Adams.

Former marketing manager at the Rickmansworth division, Kevin Moran, is now data centre manager and Michael Scott, who was principal consultant, is now consultancy manager.

Mila Tunkowska has joined AM Jacquard Systems as a European systems support specialist. She was formerly with Systime as a demonstration supervisor.

Ashley Steinhausen and Lin Cook have been appointed recruitment directors with Logistics Recruitment. Both will continue to handle permanent career assignments in the UK and Europe.

George Ellis, formerly sales executive with Control Data, has been appointed marketing manager at Lambert Computing.

Anna Bailey has joined Adroit Systems as systems manager. She was formerly senior systems analyst at British Olivetti's data processing division in Coventry.

David Green has joined ADDS as general manager. He was formerly general sales manager at MAI UK.

Running on 16 different machine ranges

Over 50 installations in industry, commerce, Government and Research

Relational databases are easy to understand and easy to use - but are they practical?

To find out more, write or phone quoting ref. RA/2, to:

Colin Banfield  
Logica Limited  
68 Newmarket Street  
London W1A 4SE  
telephone (01) 637 9111

the proven  
Relational Database  
System.

## CONFERENCES

FUTURE developments in automated office systems and inter-office communications as well as developments in the use of computers in purchasing will highlight a conference entitled Computers in Buying. Organised by the Institute of Purchasing and Supply, the conference will be held on April 14 at the New Berners Hotel, London, and is intended to introduce managers to some of the uses of computers and to examine the personnel and financial implications. Presentations will include purchased material control, an auditor's view of computers and personnel and staffing problems. The fee is £70 + VAT for members of the Institute and £77 + VAT for non-members. Details from Barbara Pullen, Institute of Purchasing and Supply, IPS House, High Street, Ascot, Berks SL5 7HU. Tel. (0990) 23711.

COMPUTER Graphics 81 will take place in London from October 27-29. The event is being organised by Online in conjunction with Computer Graphics World, the US graphics journal. The event will comprise an exhibition of computer graphics equipment, systems and software, with an international conference and range of tutorials and seminars. The conference organisers are bearing in mind the use of computer graphics as a tool for industry and commerce, as well as an adjunct to the growing number of personal microcomputers. Details are available from Online, Argyle House, Joel Street, Northwood Hills, Middlesex. Tel: (09274) 28211.

THE ROWETT RESEARCH INSTITUTE  
Buckburn, Aberdeen, AB2 9SB

## COMPUTER REQUIREMENTS

The Institute is to implement a scientific/data acquisition computer system. It will consist of a host minicomputer and 16 microcomputers. These are required for analogue data acquisition and will communicate with the host, which must also provide an address space of 2 Mbytes for each of several users. The contract may be awarded as a whole or in part.

Applications for copies of the Operational Requirement should be made to the Biometry Department at the above address. Replies to the Operational Requirement must be received by six weeks from appearance of advertisement.

RAPPORT gives you the practical features needed to manage a working database - indexing for fast retrieval by any key - powerful, readable program commands - interfaces to FORTRAN, COBOL and CORAL - physical data independence - full update logging and recovery - support of multiple users - Interactive Query Language - data access protection to field level.

To find out more, write or phone quoting ref. RA/2, to:

Colin Banfield  
Logica Limited  
68 Newmarket Street  
London W1A 4SE  
telephone (01) 637 9111

the proven  
Relational Database  
System.

Running on 16 different machine ranges

Over 50 installations in industry, commerce, Government and Research

Relational databases are easy to understand and easy to use - but are they practical?

To find out more, write or phone quoting ref. RA/2, to:

Colin Banfield  
Logica Limited  
68 Newmarket Street  
London W1A 4SE  
telephone (01) 637 9111

the proven  
Relational Database  
System.

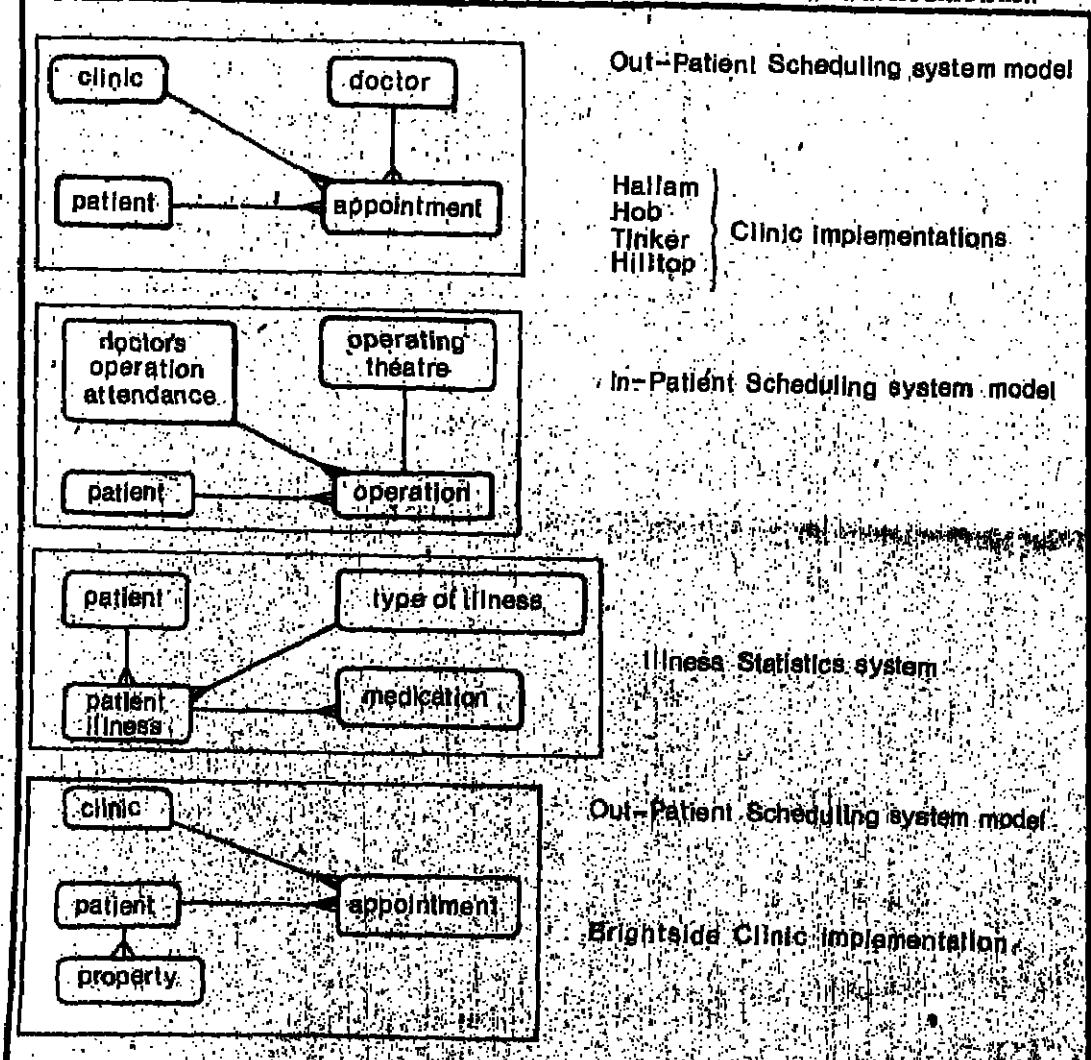


Figure 1: Existing hospital systems

**Which system holds the correct details? Let the users fight it out.**

This is a user problem - it may require him to generate the data from scratch (much as he may object) and ignore the fact that data values do exist.

The second problem concerns duplication of data items over several record types within the one system. For example, in our Out-Patient Scheduling system, patient details may occur not only in the patient record but in the appointment record, and several other transaction files or even interface files between systems.

The question here is: which file/record type is likely to be the most up-to-date and correct? This can normally be worked out from the systems specification, although I have known cases where this has also required the user to generate data from scratch. Where this system team has labelled a file "master file", it is usually a good indication that this may be the best source.

Duplication over several record types over more than one system usually causes the most headaches, simply because it ends up being a political problem as well as a data problem, as every user is convinced that his data is more correct than anyone else's.

The problem arises when the data items describing an entity

	Record 1	Record 2
*Patient Number	AB645	AB645
*Sex	male	female
*Date of Birth	15/10/70	10/10/70
*Start date of illness	10/1/80	8/1/79
*End date of illness	20/1/80	15/1/79
*Type of illness (diagnosis)	asthma	asthma
*Normal length of illness	3 weeks	4 weeks

Figure 3

be compared with the functions of the new system. The purpose of this is to find out:

- where the new functions require back-up by part of the old system to provide the attribute types required;
- where the new functions were incorrectly specified and hence the attribute types are either wrong or not what is required;
- how the transition from the old system to the new system can best be achieved. In other words, the best phasing of implementations.

Comparison can either be done by comparing function descriptions, or by actually decomposing the functions of the old system. It depends on how much time is



## BOOKS

Alan Simpson reviews two works on management and an encyclopaedia of terminology

# Taking luck out of systems management

Managing Systems Development by Jeffrey Keen. 343pp. John Wiley & Sons.

FEW aspects of DP management are more intangible or intractable than managing systems development. As an art it is highly abstract and as a responsibility it is often a complete disaster area.

Fall-out comes down not only on the DP management team but possibly on the company as a whole as user application implementation schedules are missed or disappoint expectations.

For many DP managers systems management is a matter of keeping fingers crossed, hoping for the best and trusting to luck. The objective of this new book is to take luck out of the project, replacing it with a formal structured approach.

Author Jeffrey Keen is a disciple of heavily scheduled and phased development. Each project is defined in terms of man days' effort based on an optimum number of

standard men and Keen suggests that compiling a detailed list of activities and resources could well take an experienced manager several weeks.

In many installations, schedules and estimates - whether compiled over a period of days or weeks - get blown off course on day one when the project leader resigns, the user department involved changes its collective mind, or the MD determines a higher priority for an alternative application.

The author falls into the common pattern of regarding people as resource factors rather than individuals while equipment is guaranteed non-fallible. In this rather surprising latter respect the book takes for granted that the hardware supplier could have an overseeing role, monitoring management and technical performance.

The IDPM would like to hear of any instances where this "supervision" does take place. However, the author does place much stress

on the fact that only firm project management will produce results.

Keen's style drifts frequently into that of lecture notes, the author lapsing into such expressions as "now we see", "let us examine" and "up to now".

□ □ □

He is obviously a DP man of many parts, billed as an independent consultant, head of a successful computer consultancy and an employee of I.T.T.

The book is produced in the Wiley series on Information Processing and is certainly one of the most thorough on the subject.

It benefits from being an English publication, a welcome diversion from the many similar text books cascading from the US. The book is well illustrated with many useful appendices, checklists and index.

A.S.

# Dated but useful technical guide

Microprocessor Background for Management Personnel by James Arlin Cooper. 163pp. Prentice-Hall Inc.

FOR a book with abundant explanatory notes, diagrams, indexes and glossaries, it seems strange that no attempt has been made to explain the title.

Close investigation reveals that the management personnel involved are potential technical managers who have, or rather will have, a responsibility for managing technical people.

If this is the case, the publishers could have got it wrong. The book would seem to be suitable study material both for technical managers and their technical staff.

The book is well produced despite some rather fuzzy pictures which give it a rather dated air, with map tapes being featured more than disc drives, and chip boards preferred to micro chips.

Possibly with the management level readership in mind, the text

is kept fairly basic with advanced mathematics at a minimum.

The microcomputer applications of microprocessors get scant coverage. According to the author, a large computer is typically room-sized, a minicomputer is smaller and a microcomputer about desk size.

A further identifying factor is that the large scale computer could cost millions of dollars, a minicomputer tens of thousands, and a microcomputer thousands.

The author suggests that a major use of microprocessors is in playing Pong or Star Wars. The diligent reader should be capable of designing and producing an electronic game on finishing the book.

As expected, much space is given to systems, design and programming techniques. For such a compact book, a surprisingly large amount of related information is included, covering topics like Social Impact and magazine listings.

A.S.

# Variation on micro melody

Musical Applications of Microprocessors by Hal Chamberlin. 661pp. \$24.95. Hayden Book Company.

THE TITLE is somewhat misleading; whoever chose it was seduced by alliteration, or assumed that any book with "microprocessor" in the title would sell automatically.

Chamberlin deals with the software and hardware techniques needed to synthesise music electronically and microprocessors certainly figure in the process, but so do many other things.

A better title might have been: Electronic music synthesis: computer software and hardware techniques.

My other criticism is relatively minor but is something that I hope the publishers will rectify in the second edition. It is that sub-sections within a chapter are titled but not numbered, which makes browsing, or indeed locating one's place, a little difficult.

Passing from the negative to the positive, Mr Chamberlin writes lucidly, and obviously knows what he is talking about.

The first section of the book, entitled Background, has chapters on the physics of sound and how we perceive music, an introduction to methods of sound modification and synthesis plus a short and perhaps unnecessary history of microprocessors.

"Computer-controlled analogue synthesis" deals with microcomputers controlling synthesis equipment.

The final section, Digital Synthesis and Sound Modification, discusses methods of synthesising music directly.

"The book is clearly and comprehensively written, with a minimum of mathematics, quite a feat considering the topics included."

JOHN WALKER

# Alarming facet of silicon

The Silicon Chip Book by Peter Marsh. £2.50. Sphere Books 1981.

"YOU cannot fight against the future" said William Gladstone in 1886, a statement equally true in 1981. But we can try to choose the best option out of the possible scenarios that may develop.

In this book, Peter Marsh follows up well-written popular science discussions of microelectronic technology and applications with a dive into the speculative area of consequences.

As unemployment heads for nearly three million, many "beneficiaries" of the electronic revolution may be less concerned with the technological advances and more interested in the discussion of ways in which computers can create jobs.

The book also discusses the associated question of whether the job-creating role would be enough to offset the displacement of workers from existing jobs.

I liked the author's classification of broad directions in which the country could steer which are summarised neatly under four headings: "haves" and "have-does".

A patched-up, go-for-growth society continuing much as we are, is, alas, the most likely. It would mean a gloomy economic outlook and a society split between computer "haves" and "have-does".

Probably the most important suggestion of Marsh's book is that we should not trust computers too much, nor so blind ourselves by the power of machines that we forget to supervise them. Amen to that!

ISRAEL BERNKOVITZ

## PRODUCTS



The Sintrom VP800/B Video Processor with 28-character display.

# VDU terminal has 28-line display

SINTROM Electronics has introduced the VP800/B Video Processor, an intelligent VDU terminal with a maximum display capability of 28 lines of 132 characters.

Manufactured by Direct Inc., the VP800/B can be programmed to emulate popular terminals, including DBC's VT-100, while offering a wide range of enhancement features in comparison with these terminals.

Besides the 28 line x 132 character display, the VP800/B also provides a 24 line x 80 character format. Resolutions of 6 x 10 and 10 x 12 respectively with a 7 x 9 character dot matrix ensure a legible display.

Characters can be displayed double height and double width, and line drawing characters contained in the standard character set allow the VP800/B to be used for forms generation, business graphics and scientific presentations.

User-defined graphic characters can expand further the diversity of screen presentations.

A split-screen mode allows the display to be divided into two areas permitting the operator to receive status or prompt information in one area while entering data in the other.

Forward or reverse smooth scrolling is at 3 or 6 lines/second and the standard 4K memory will store 3 highest-density pages under the control of a dynamic memory manager packing text at

one display character per location. With average density text, the 4K memory accommodates 6 pages typically and higher application demands can be accommodated by 16K and 32K memory options. Other video attributes include blink and underline.

The detachable typewriter-styled keyboard has 8 user-programmable function keys, a numeric/function keypad and operator-controlled keys for selecting terminal features such as autorepeat, keylock, margin bell, tab stops and reset.

All terminal parameters can be set via the keyboard or by downloading from the host computer. When not in use, the keyboard hinges back into the console and makes the VP800/B both compact and secure.

The VP800/B has an RS232C port and a buffered printer port. Data rate is up to 19,200 baud and terminal features include auto xon/xoff, auto tab/repeat, user-programmable answerback and self-test diagnostic.

A font definition package is available which includes user-defined and host computer loaded character sets and proportional spacing.

The single unit price of the VP800/B starts under £1,395 and delivery is currently four weeks. Sintrom Electronics Ltd (CW), Arkwright Road, Reading, Berks. Tel: (0734) 85464/84322/863417.

# Texas printer aimed at electronic mail

WITH an eye on the electronic mail market, Texas Instruments has launched the Omni 840 impact printer in both keyboard and remote (KSR) and receive only (RO) versions with options for 9,600 baud transmission and a 4K input buffer.

Both versions print at 75 cps, weigh about 25 lbs, have a 7 x 9 matrix print head and transmit/receive data to 110, 300 or 600 baud.

The 840 is also designed to be used as a terminal for time sharing systems as well as an input/output device for minis and microcomputers. It uses a cartridge ribbon and costs £650 to £1,070 for the KSR version or between £730 to £895 for the RO.

It has incorporated what it calls optional bi-directional printing at 132 characters wide friction

feed carriage for the 840. Standard features include a 256 character FIFO buffer for data overflow protection and self-test diagnostics to verify operating parameters when the machine is started up.

It has communications line and terminal status indicators as well as online, local and command modes and many electrical and mechanical parts are interchangeable between KSR and RO models.

Options include forms control that provides for vertical and horizontal tabs and margin control; expanded and compressed print; tractor paper feeding attachment; 9,600 baud transmission; 4K input buffer and 9 x 9 matrix print head for graphics.

Texas Instruments Ltd (CW), Manton Lane, Bedford MK41 7PA. Tel: (0234) 67446.

# Aller disc controller

THIS HIGH reliability, fast access time and low cost per bit ratio of Aller disc drives have enabled them to become a popular mass data storage device.

Most systems require the data to be in a particular form and the controller should also be able to perform the serial-to-parallel and parallel-to-serial conversions.

The Aller PDC's floppy disc controller is based on the ED7007 and has been designed to interface these functions together

with recording density control and head selection for double-sided drives. Data format may be IBM 3740 (GPM) or IBM System 34 (MPMA) compatible or a custom format may be selected.

The host system interface comprises an 8-bit data bus, a 20-bit address bus and the necessary control signals.

Aller Services (CW), High Street, Abingdon, Oxfordshire. Tel: (0235) 56464.

# Roneo adds to mailing systems equipment

RONEO Alcatel has added the Neopost 2202 Forms Bursting and Neopost 2202 Forms Decollator to its range of mailing systems equipment designed to process computer stationery ready for mailing.

The 2010 Forms Bursting is claimed to incorporate features and accessories found normally only on larger models. It is simple to operate and requires no tools for set up and the 2010 can burst 7,500 11 inch or 23,500 3 1/2 inch forms in an hour.

Special 2010 features include an exclusive, patented static bar to eliminate paper cling and adjustable breaker rollers.

The 2010 operates continuously when bursting and has a dual trim width and trim point indicator system making setting up easy and giving precision, trimming.

The 2010 is engineered for operator safety with transparent trimmer, conveyor guards and electrical interlocks.

A simple-to-operate decollator, the Neopost 2202 can decollate at up to 350ft. per minute. The 2202 can separate a box of 2-ply carbon interleaved forms in less than 4 1/2 minutes.

Forms up to 6-ply carbon interleaved or 4-ply carbonless can be separated by repeat runs.

The 2202 refolds and stacks the carbon on an open-ended spindle for fast removal and can handle forms from 4in to 15in wide and 3in to 12 1/2 in long.

Integral infed shelf and pull-out refolding shelf allows the 2202 to be used on its own table.

Both the 2010 and 2202 are supplied with a custom-built table with a convenient two-position forms infed shelf, storage area and chrome casters for smooth and easy movement.

Roneo Alcatel Ltd (CW), PO Box 3, South Street, Romford, Essex RM1 2AR. Tel: Romford 46000.



The Microtecnic tape reader.

# UK launch of low-cost 200 chps tape readers

SINTROM Ellnor is marketing two new Microtecnic Tape Readers in the UK, the RRS 7155G 6-inch reel machine and the RRS 7200D 7.5 inch reel machine.

Both readers are capable of operation up to 200 chps asynchronous and are available with standard 8 character, 1 inch tape format, or a range of optional formats aimed at numerical control applications.

The readers can function bi-directionally and will stop on a DC3 character from either direction. Rewind speeds are 400 chps for the RRS 7155G and 300 chps for the RRS 7200D.

I/O interfaces are +5V TTL with switch selectable logic polarity. Both readers are provided with a protective rear cover as standard and the RRS 7155G can be supplied with an optional desktop enclosure.

The readers can operate from 115V or 220/240V, 46-63Hz power, selected by a switch on the RRS 7155G and a wire link on the RRS 7200D.

The 10-off price starts at under \$1,300 for the RRS 7155G and under \$1,600 for the RRS 7200D. Sintrom Ellnor Ltd (CW), 14 Arkwright Road, Reading RG2 0LS. Tel: (0734) 85464.



EDUCATIONAL COMPUTING is the new magazine for everybody who has ever wondered what the microcomputer revolution has meant to education. Here's your chance to find out everything about the use

and study - of computers and their peripherals in schools, colleges and universities. Computer services have an obvious part to play in the educational process itself.

As well as providing important opportunities for your students to learn many skills which could be vital to their futures, you will benefit personally by greater familiarity with the one subject that's undeniably changing everyone's life.

This unique magazine will offer penetrating investigations into the educational applications and implications of data processing systems; full details of available

courses, examinations, and career options; and an authoritative range of reviews - of equipment, software, programs, and books currently on the market.

And our "Beginners' Guide" really does start right at the beginning, with advice on raising the finance for your hardware, and how to be sure you're choosing the right system for your needs.

Teachers and students alike will want to use EDUCATIONAL COMPUTING to keep them abreast of the latest technological developments. As one of the ECC family of top computer publications, you'd be right to expect a knowledgeable - and entirely unpartisan - editorial approach. This is a complex and challenging new field, where there is always something new to learn. So don't risk being left behind. Send the coupon today.

Please enter my subscription for ten issues at the annual rate of £6.50. I enclose a cheque/PO. Please charge my credit card (delete as applicable).

Name \_\_\_\_\_ Title \_\_\_\_\_

School/College/University \_\_\_\_\_

Address \_\_\_\_\_

Signature \_\_\_\_\_

No. \_\_\_\_\_

Send to: EDUCATIONAL COMPUTING, ECC Publications Ltd, 30/31 Islington Green, London N1 8B.

# COMPEC EUROPE '81

MAY 5-7 1981

EXHIBITION - BRUSSELS

## SPECIAL TRAVEL ARRANGEMENTS

COMPUTER WEEKLY in association with COMMERCIAL TRADE EXHIBITION LTD., has arranged special trips to Compec Europe Exhibition in Brussels. Accommodation has been reserved at the SHERATON Hotel in Rogier Place, opposite the fair grounds.

## Itinerary

There are two special arrangements, one for Exhibitors, staying five nights, and one for Visitors, staying two nights. Flights are by scheduled services from London (Heathrow or Gatwick) Airports on flights of your choice subject to availability.

Price per Person (Sharing twin bedded room with facilities)

Tour A 5 nights	£265.00
Tour B 2 nights	£175.00
Single room supplement (per night)	£20.00

Accommodation Only Twin with Bath	£59.00 per night
Single with Bath	£90.00 per night

Please complete in block capitals and return to Commercial Trade Exhibition Ltd., Carlsile House, 8 Southampton Row, London WC1. Tel: 01-405 8666, 5469. Telex: 21792-949.

Name \_\_\_\_\_ Address \_\_\_\_\_ Telephone Number \_\_\_\_\_

Additional address if Party 2 \_\_\_\_\_

The following accommodation is reserved: Twin with bath/visitor; Single with bath/visitor.

I require suitable connecting flights if possible from \_\_\_\_\_

Arrival in London and return \_\_\_\_\_

Exhibitors: I have been invited to exhibit at \_\_\_\_\_

Visitors: I have been invited to visit at \_\_\_\_\_

Comprehension Insurance required: YES NO Cost £5 per person

Deletions applicable to: YES NO

I am interested







# Appointments

THE NEWSPAPER COMPUTER PEOPLE RELY ON

# Appointments

**Computer Weekly**

Classified Department, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Box Numbers: Should be addressed to the box number in the advertisement c/o Computer Weekly at the above address

Classified Rates: £18 per line 19 x 3 cols - £872 20 x 3 cols - £1,470 10 x 7 cols - £1,530 30 x 4 cols - £1,792 Full Page (30 x 7 cols) - £2,900

Copy Deadline: 3.30 pm Monday prior to Thursday publication date. Complete artwork up to 11 am Tuesday. Advanced space reservation is advisable

LONDON 01-661 0121 (8 lines)  
Chris Prier: Assistant Classified Manager  
Neil McDonnell: Classified Supervisor  
John Four: Consultants  
Julia Hamford: Consultants  
Dennis Smith: General Appointments  
Gillian Johnson: General Appointments  
Kevin McQueen: General Appointments  
Peter Repp: General Appointments

MANCHESTER/LASGOW  
Owen Kelly 061-872 8861  
Noel Ashen 061-872 8861

BIRMINGHAM/BRISTOL  
Vic Street 021-356 4838

Classified Production 01-661 3000 Ed.  
3104 Steve Lever

**MYRIAD**

## BUSINESS SYSTEMS ANALYST INTERNATIONAL PAYROLL & PERSONNEL SYSTEMS

BASED LONDON W6

TO £13,500

A highly successful engineering construction organisation now wish to recruit a Business Analyst to join the development of a major new project co-ordinating multi national requirements.

The person appointed will become a key member of a broad-based project team and will be the computing specialist in the areas of Payroll and Personnel applications. The International nature of the project dictates that the person will need to be mature and capable of consultation and liaison with Senior User Management in the U.K. and overseas offices, to ensure the successful co-ordination of development and implementation of the system.

Candidates will be required to offer substantial relevant applications experience in addition to a successful background of data processing project development. The role will require the person to develop the business specifications for the U.K. and overseas locations and thence travel to the U.S.A. for a short period to help produce the corporate systems specification. Subsequent short-term travel may be required to implement the system.

Data-Processing plays a major part in the business activities of the company and therefore career prospects in both the U.K. and overseas are very attractive. An excellent range of employee benefits are offered in addition to the very competitive commencing salary.

**MYRIAD APPOINTMENTS LIMITED**

30 Fleet Street London EC4Y 1AA Telephone 01-353 0981 24 hours

### Senior Programmer/ Analyst

SOUTHAMPTON up to £9,686

At our Headquarters we at Southern Gas have an IBM 9032 and 3031 supporting 400 terminals to provide on-line, real-time systems. Systems software includes OS/VS1 (moving to MVS), CICS, VSPC, Rascal, DL/I. Our five-year development programme involves extension and replacement of our existing systems using structured techniques, database and PL/I.

We require two Analyst/Programmers or Senior Programmers. Applicants (men or women) should have at least three years experience (time of IBM machines). Excellent conditions of service apply, assistance given with cost of moving if appropriate.

For an application form please write to the Senior Personnel Officer (Recruitment), Southern Gas, 80 St Mary's Road, Southampton, or ring us any time evening ref. P117/CW, on Southampton (0703) 31818

**SOUTHERN GAS**

THE ROYAL MARSDEN HOSPITAL  
FULHAM ROAD, LONDON SW3

### Analyst/Programmer

Salary Scale £6839-£8221

The Royal Marsden Hospital is implementing a medical database involved with patient management, administration and clinical research. New applications are being phased in over a period of several years.

The machine currently in use is a DEC POP 11/70 operating under QSM-11 (MUMPS) with over 30 terminals constantly on-line.

An Analyst/Programmer with a minimum of 4 years DP experience is required to join the development programme. Responsibilities will include working closely with Hospital staff at all levels to design and implement real-time systems. A considerable degree of autonomy is associated with the job. Previous medical or real-time experience is not essential, but would be an advantage. For further details ring Jean Cargill on 01-642 8011 ext 542. Application forms and job description available from Miss E.M. Bewley, Group Personnel Officer on 392 8171 ext 446. Closing date for receipt of completed applications: 18 April 1981.

### THE UNIVERSITY OF LEEDS SENIOR SYSTEMS ANALYST

ADMINISTRATIVE COMPUTER UNIT

Applications are invited for the post of Senior Systems Analyst. The holder of this post supervises a staff of eight analysts and programmers who are maintaining and developing a wide range of applications for the central Administration of this large University, and is also expected to act as Deputy to the Senior Assistant Registrar (Data Processing Services).

Applicants should have not less than five years' sound commercial experience in systems analysis and programming and will have acted as project leader on a number of major projects. They should also have a particular interest in applying modern computer technology to a changing office environment.

All Administrative Data Processing operations are based on a large ICL 2904/60 and a significant network of VDU and other office links is developing mainly through 7602 terminals. There are also two 7700 word processing installations on site. A background of development work on this type of machine environment would be most desirable and it must be noted that this is a demanding post requiring a candidate of high calibre and with real enthusiasm.

Salary on the Administrative Scale II (£10,180-£12,800). Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference number 118/A2. Applications should be submitted as soon as possible and no later than 23rd April 1981.

**MYRIAD**

## SYSTEMS ENGINEERS OFFICE SYSTEMS FOR THE EIGHTIES

NORTH WILTS.

£8,000-£11,000

The successful candidates will offer a proven background in systems development including substantial experience or one, or more, of the following areas:

We are seeking enthusiastic and well-motivated systems engineers to join a specialist group which has responsibility for the evaluation, definition and development co-ordination of advanced systems for Telecommunications and Information Processing.

The Group has a major development plan which, in conjunction with the existing products, will enable the company to make a major impact upon the Office Systems market of the next decade.

★ Hardware development of digital electronics in communications and computer interfacing.

★ Software for computer communications and filing systems, editors, etc.

★ Digital systems simulation for modelling future business systems.

★ CCITT standards and protocols for digital information exchange.

Engineers will be educated to degree level, be prepared and able to take a total system approach, and be sufficiently experienced in one or more of the above fields to take a given project to completion.

These positions offer excellent scope for technical originality in a demanding and exciting field. Conditions of employment are excellent and include comprehensive relocation expenses where appropriate. To discuss the scope of these opportunities in detail and arrange an interview either telephone Myriad on the number below or write quoting reference RN1/0204/CW.

### TELECOMMUNICATIONS SOFTWARE DESIGNERS

WILTSHIRE £NEGOTIABLE

One of the market leaders in the field of telephony systems, our client is seeking additional Senior Software Designers/Programmers who will play a major role in the development of the new generation of fully digital telephone switching systems.

The successful candidate will offer experience of:

★ Telephony software development.

★ Mini and micro systems.

★ High level languages (CHILL/PASCAL/CORAL)

The company offers excellent conditions of employment including high base salaries and relocation expenses where appropriate. To discuss the organisation and these positions in detail telephone Myriad on the number below. Alternatively write quoting reference RN2/0204/CW.

### BUILD A DEC NETWORK UXBRIDGE £9-£10½K

A recently installed PDP 11/70 forms the heart of a distributed processing network that will support twelve remote sites, thereby providing advanced interactive systems for local users.

The Software Group is now seeking to expand its team of specialists by recruiting a TECHNICAL PROGRAMMER with RSTS/E operating system experience. BASIC+2 knowledge is highly desirable, but applicants with a sound hardware and telecommunications background will be equally considered, as the Group is currently tuning and further developing the network.

★ RSTS/E

★ REMOTE  
TERMINALS

★ TELECOMMS  
SYSTEMS

★ REAL-TIME  
SOFTWARE

★ RMS/FMS  
TRAINING

★ BASIC+2

The Company is proud of its international reputation as an employer offering a secure and positive future along with a first-class benefits package, including relocation expenses where appropriate.

REF. S2/0204

**MYRIAD APPOINTMENTS LIMITED**  
30 Fleet Street London EC4Y 1AA Telephone 01-353 0981 24 hours

Job 11/170



## Recruitment LOGISTIX in informatics

### Pascal Programmers

London & Home Counties: Salary to £10K

A leading supplier of microprocessor development systems has an urgent requirement for Programmers to participate in its advanced, complex development project. Whilst our client has a strong preference for respondents with a knowledge of PASCAL, candidates fluent in any technically oriented high-level language are encouraged to apply. It is essential for all applicants to demonstrate a knowledge of Structured Programming techniques and to have worked on mini- or microcomputer-based systems. These vacancies will strongly appeal to talented, career-minded individuals wishing to enhance their technical skills in one of the most challenging areas of the data processing industry. Ref. L/14/A

### Technical Authors

Home Counties: Salary to £10K

Excellent opportunities have arisen for Technical Authors to join a market leader in the manufacture of mini- and microcomputers. All respondents should demonstrate a good command of the English language and have the ability to communicate with people at all levels. Suitable candidates will, probably have designed and written user documentation for a Data Systems Software product. However, if you have experience in Programming or Systems Analysis and a desire to progress into the area of Technical Authorship, you should not be deterred from applying. Successful candidates will work in a multi-disciplinary team involved in the preparation of integrated training and documentation packages for world-wide use. Ref. L/14/B

### Communications Software

Southern Germany: Salary to £15K

Communications Engineers from Programmer/Analyst to Team Leader level are urgently required by one of Europe's leading suppliers of communications equipment. Software development teams, based in their R & D Headquarters, are currently engaged in the design and construction of an advanced telephony system based on fast 16-bit microprocessors. All applicants must possess at least two years' real-time software development experience on any leading mini-or microcomputer and be fluent in one high-level, problem-oriented language such as PASCAL, COBOL or FORTRAN. For the more senior positions it is also necessary to be familiar with an Assembly language and be capable of supervising a small team of Programmers and Analysts. Initial interviews will be held in London and those who are successful will be invited to the Company's premises prior to offers of employment. Ref. L/14/C

### Financial Applications

Berkshire: Salary to £13K + Car

Our client is a U.S. parentage having its headquarters close to extensive motorway and rail facilities in Berkshire. As a result of increased sales of its financial management systems the Company is now seeking additional Financial Analysts and Designers to act in both pre- and post-sales environments where analytical design skills are essential. Successful candidates should be aged 28-35 years and possess an outgoing personality since these positions entail a large amount of user contact at both board and technician level. Technically, you should offer experience gained in a Banking (Retail or Merchant), Stockbroking or Accounting environment with large-scale IBM user or Systems Supplier. Ref. L/14/D

### IBM Systems Engineers

London and E.E.C.: Salary to £20K

Several IBM-orientated Systems Engineers are sought for the Customer Support Division of a leading supplier of DBMS and T.P. Software products. Extensive knowledge of at least two of the following is essential: CICS, IMS, TOTAL, DBMS, MVS, TSO, ENVIRON or SHADOW. Such exposure will preferably have been gained during the implementation and/or support of Database and Teleprocessing systems utilised by a large manufacturing or financial organisation. Applicants wishing to be based in Continental Europe will be expected to possess a working knowledge of either French or German. Where applicable, full relocation costs will be provided. Ref. L/14/E

### Cobol Programmers

H Counties/Holland: Salaries to £13K + Car

A leading Systems and Software House, which has expanded rapidly over the last 5 years, currently requires Programmers for both its U.K. and Dutch offices. Applicants should be graduates with a minimum of 3 years' COBOL and/or BASIC programming experience on any mainframe, mini- or micro-computer. Working as a member of a small team you will be involved in the development of bespoke software for various clients, including most major computer manufacturers. The company offers outstanding benefits including 14 months' salary per annum, a company car, an annual bonus and an opportunity to purchase shares.

### Graphics Applications

Thames Valley: Salary to £10K + Benefits

A market leader in the manufacture, sale, and support of graphics terminals and instrumentation devices has a requirement for Systems Programmers and Applications Support Consultants. An in-depth knowledge of either FORTRAN or Assembly is mandatory. In addition our client seeks current post-graduate involvement with CAD/CAM techniques by at least one of the applicants. The successful candidate will be offered a competitive salary, a company car, and a relocation package including a non-repatriable health and medical scheme. Ref. L/14/F

Logistix, 10 Grenville Place London SW7 4RW

01-373 8063

LOGISTIX

Telex: 28800

## THAMES VALLEY

### COBOL PROGRAMMERS

C. £9,500

OUR CLIENT IS LOCATED CLOSE TO THE A4/M4 MOTORWAY. THEY HAVE A NEED FOR 2 SOUND COBOL PROGRAMMERS WITH AROUND 1-2 YEARS' COMMERCIAL EXPERIENCE, PREFERABLY IN AN IBM OS ENVIRONMENT. CURRENT HARDWARE USED IS A 370/168 AND 3033 RUNNING UNDER MVS

CONTACT JACK COLLINS, DP RECRUITMENT DIVISION ON 0273-833848 (9-5 pm) OR 0273-400880 (ANY EVENINGS OR WEEKEND AFTER 6.30 pm)

## CAMP

### DATA PROCESSING MANAGER

To install and run an IBM System 34 Computer at our Group Head Office soon to locate in WINCHESTER, Hampshire.

We are looking for an experienced Data Processing Manager, aged 28-35, preferably a self starter, interested in Systems Design and Development, and have a co-operative approach in dealing with staff and functional management.

Specific skills required are:-  
1) IBM 34 Programming and Systems Analysis utilising an IBM System 34 with remote terminals  
2) Supervisory experience in Data Processing - 3 or more years  
3) Telecommunication experience

In return we offer the chance to join a fast-expanding Group with excellent prospects, an attractive remuneration package of a starting salary around £8,500 and a company car.

Please apply in complete confidence, submitting curriculum vitae to:-  
Mr. K. Snelgar, Chief Accountant, S. H. Camp & Company Ltd., East Portway, ANDOVER SP10 3NL (closing date for applications 10th April 1981).

## MICRO CHALLENGE IN CANNES FRANCE

We are a young, dynamic international organisation applying micros for mini jobs. We need a fearless systems programmer. Our equipment is a Winchester based network of micros running under C.P. - M. Our language is Cobol, not French. Salary negotiable: c.£10,000 p.a.

Contact Sean Nash  
RACK HOREX LTD.  
Regency House, Dedmire Road  
Marlow, Bucks.  
Tel: (06284) 74511

## Applications Engineer (General Systems Marketing)

A rapidly growing international company, Zilog develops and manufactures microprocessors for a wide range of applications including development systems for computer designers and general purpose business and commercial microcomputing systems.

As Applications Engineer you will report to the General Systems Marketing Manager and your responsibilities will include technical and marketing support to Zilog's European Sales Organisation and to customers on the company's general systems products. You will provide training, technical seminars, application notes, competitive analyses, sales aids and other promotional material. Some European travel will also be required.

A car will be provided and you will be eligible to participate in non-contributory pension and BUPA medical plans.

Salary is reasonable.

Please write in the first instance enclosing your curriculum vitae to:-  
Dr Pamela Collier  
Zilog (UK) Ltd.  
Babbage House, King St., Maidenhead, Berkshire RG6 1DD  
Tel: (0628) 36131

Zilog  
EXON

## COMPUTER STUDIES

at The Royal National College for the Blind, Hereford

A Lecturer is required to help establish and run a new Department of Computer Studies in the College. The person appointed must have commercial or industrial experience in the computer field and will probably be a graduate in Computing or a related discipline. Teaching experience would also be an asset. The appointment will be at an appropriate point on the Head of Department Scale 1-75% Burnham F.E. £9,387-£10,704.

R.N.C. is the only College of Further Education for the visually handicapped in the country. It is mainly residential and the present number on roll is 180.

Please apply in writing, with full curriculum vitae and the names of two referees, to: The Principal, Lenz Marshall, M.A., Royal National College for the Blind, College Road, Hereford HR1 1EB, from whom further particulars may be obtained (telephone 0432 66724).

## USA-California

For periods ranging from six months to 1 1/2 years, our Client on the West Coast urgently needs a team of 10

PROGRAMMERS  
IBM COBOL OS TSO SPS (min. 2 yrs. exp.)  
IBM COBOL OS IMS (min. 2 yrs. exp.)  
Any MINI BASIC (FORTRAN an advantage)

DATABASE ADMINISTRATOR  
IBM COBOL IMS OS

If the environment appealed to you our Client would, whilst working on the contract, apply on your behalf for the necessary papers to enable you to take up permanent residency. Interviews will take place in London from 18th to 15th April, 1981. Contracts commencing April to June, 1981.

TELEPHONE 02403 22201

PROGRAMMING & SYSTEMS LTD

## IMMEDIATE CONTRACTS FOR PROGRAMMERS

In excess of £20K p.a. and all expenses

Programmer	Middle East	PRIME/Cobol
	East	pref Fortran IFPS
Project Leader	Middle East	IBM -
	East	IMS DB/DC
Analysts	Middle East	IBM -
	East	TSO IMS MARK IV
Progs	Middle East	IBM -
	East	MARK IV PL1 TSO/SPF
Progs	Middle East	IBM - PL1/COBOL
	East	Scientific applications

In excess of £15K p.a.

Prog/Analyst	Croydon/London	IBM System 34
		RPEII Cobol
Programmer	Kant	DEC BP
		Basic & RSTS

For further details please contact:

**NYC POLAND TYLIN PEOPLE**  
A division of Tylin Management Systems Limited  
Leon House, High Street, Croydon, CR9 3NH  
01-680 2223

A member of the TATE & LYLE GROUP

Members of Computing Services Association

TYLIN

## NORTHERN REGIONAL HEALTH AUTHORITY SYSTEMS ANALYST/PROGRAMMER

Salary Scale: £7,134-£8,761 (PAA Scale 8)

Applicants should have at least 5 years' computer experience. The post offers an outstanding opportunity for a DP professional to work in the Health Service. Work carried out includes hospital, nursing, financial and community health systems.

We offer:  
\* A challenging position in Health Service computing.  
\* A modern computer centre housing a 16MB 2800S running under DME. Conversion to VME/B will commence shortly.

\* On-line program development techniques via VME/B.

\* 37 hours flexible working week.  
Application form and job description available from the Regional Personnel Officer, Northern Regional Health Authority, Benfield Road, Newcastle Upon Tyne NE5 6PY.

Closing date: 17 April, 1981. (50431)

## QUEEN MARY COLLEGE University of London COMPUTER SCIENCE & STATISTICS DEPARTMENT

### RESEARCH ASSISTANT

required for SPC-supported project directed by Dr. A. H. Bond, to investigate model matching techniques in computer vision, using the ICL Diabuild Array Processor. Appointment for 18 months from as soon as possible at salary up to £847 p.a. including London Allowance.

Applications, enclosing c.v. and names of 2 referees, should be sent to The Secretary (QMS), Queen Mary College, Mile End Road, London E1 4NS. (5050)

## ANALYST/PROGRAMMER

SAPPA Ltd., established poultry farmers, hatcherymen and egg wholesalers, has vacancies for an experienced Analyst/Programmer and a Junior Programmer with knowledge of D.B. Systems. Salary under R.D.S.

The work will involve development and maintenance of software applications in the agricultural field. Salary will reflect experience. Please apply in writing, with C.V., to: D. J. Telling, Company Secretary, SAPPA Ltd., 91 Northgate Street, Bury St. Edmunds IP23 1JA. (5044)

## INCREASE YOUR SCOPE -

Join an expanding company

## Analyst Programmers

£9-13000 p.a.  
plus extensive benefits

Our client is a major computer services company, well established, and very successful.

Continuing expansion has created a need for several more Analyst Programmers/Consultants, with commercial, general financial, or accounting systems experience.

The job is varied, and further experience and training will be continually forthcoming.

## They seek

- \* some analysis experience/ability
- \* COBOL programming
- \* an appreciation of commerce
- \* a desire for customer satisfaction
- \* flexibility and mobility

## They can offer

- \* "Top ten" salaries
- \* variety of work; experience and responsibility
- \* non-contributory pension and other benefits
- \* profit share and share purchase schemes
- \* RELOCATION help if necessary

To learn more of these excellent opportunities based in NORTH EAST SURREY, contact Derek Pearson now, quoting 844P and arrange an instant interview.



ZEUS-HERMES RECRUITMENT

TELEPHONE: 01 388 5011 (24 HOUR SERVICE) OR WRITE: (NO STAMP REQUIRED) ZEUS-HERMES RECRUITMENT LTD FREEPOST 20 LONDON W1E 4YZ



01-388 5011



**Middle East**

**Gulf Area** to £24K tax free package.

An established software house operating throughout the Gulf urgently requires professionals to work on projects for themselves and their clients.  
Analyst/Programmers, IBM 370/4331, OS COBOL.  
Software Programmers, CICS, COBOL or ASSEMBLER.  
Mini Specialist, CMC Reality, Basic.  
Package includes an excellent salary plus a furnished apartment. Married status accepted.  
Contact: Brian Postles

**Consultants**  
**Aircraft Simulation**

**Paris/USA** £20,000 + expenses  
Our Client, an internationally recognised consultancy require a number of experienced technicians to work on the development of major Aircraft Simulation systems. Candidates should have a degree or equivalent with at least 3 years real-time software design experience and have the confidence that stems from total familiarity with the unique and often multi-million pound devices associated with this technology. Whilst abroad you will enjoy good overseas allowances as well as the excellent basic salary.  
Contact: Margaret Stevens

**Sales Consultants**

**Essex/Birmingham** c. £13K + car  
A leading nationwide bureau organisation is seeking experienced Sales Executives to contribute significantly to current expansion plans and develop their own customer base. You will be responsible for selling the bureau's wide range of data processing services, including application packages, terminal enquiry facilities and bespoke systems. Main preferred qualities sought, are a sound understanding of business problems, a proven sales record in a related field, and ideally, a background in accountancy or business systems. Targets are very realistic, and achievable, for salesmen with energy, initiative and the enthusiasm to succeed.  
Contact: Brian Postles

**Project Leaders**

**London/Europe** £12,000 +  
An internationally recognised systems house are looking for Project Leaders to be based in London, but who are prepared to undertake overseas travel and assignments. Projects incorporate message switching systems, new developments in networking and automated offices. Experience must consist of at least three years design and implementation of software for data communication systems, project leading on complex real-time systems with a communications content and understanding of operating systems, interface and protocol software. Knowledge of drivers and emulators would be a definite advantage.  
This is an excellent opportunity to join a well established organisation and enjoy working in an environment which offers interesting projects, European travel and good financial rewards.  
Contact: Janet Chilvers

**Project Leaders/Senior Analysts**

**West London** to £12,000  
Our client, a market leader in the manufacture of all levels of computer hardware and software, requires professionals to strengthen their product development teams. Specialising either in financial or general business systems you would be responsible for design, analysis and the control of programming and implementation. Applicants should have 3-4 years COBOL in a commercial environment, have been involved in a total project and be of degree standard. Man management and inter-personal skills are of equal importance. Opportunities for progression are genuinely excellent and are dependent purely on individual abilities.  
Contact: Brian Postles

**Product Support Manager**

**London** c. £9,000 + Car  
Sweda International, a division of Liton Industries, are market leaders in the challenging field of advances and electronic point of sale cash systems and are currently seeking a product support manager to head their expanding systems team responsible for pre and post sales support.  
The successful applicant will be aged 28-35 and have a systems and programming background preferably with experience in the field of telecommunications. A pre-requisite will be a mature outlook, the flair and communication skills to deal with an expanding customer base, and the desire to succeed in a highly marketing orientated organisation. Normal benefits coupled with an attractive salary complete the package.  
Contact: David Hendry

**Analyst/Programmers**

**Cambridge** £7 - £10,000  
Due to the securing of major contracts this organisation, specialising in the development of advanced engineering software, is recruiting experienced Analyst/Programmers to join a newly formed development unit concerned with all aspects of the design of chemical plant.  
Applicants should have a proven ability in Fortran preferably with a background in Mathematics or Engineering. Experience in computer graphics and/or database techniques would be of particular relevance.  
Contact: David Hendry

**Communications Programmers - Babbage**

**London** £8,000 - £9,000  
Continuing expansion of our client's International Videotex business has created opportunities for GEC 4000 Babbage programmers in real-time and network systems. Applicants should have at least four years programming experience and be capable of tackling packet switching, colour and business graphics, in this fast moving and exciting field. Possible overseas travel.  
Contact: Jim Baker

**JAMES BAKER ASSOCIATES**  
International Personnel Consultants,  
32 Savile Row, London W1  
Tel: 01-439 9311

**BRAINWARE**  
**OPPORTUNITIES**  
**with PANSOPHIC**  
**Support/Development Staff**  
**Manchester and London**  
**PACKAGE UP TO £16,000**

Pansophic Systems (UK) Ltd. requires more technical staff to support its continued expansion in the UK.

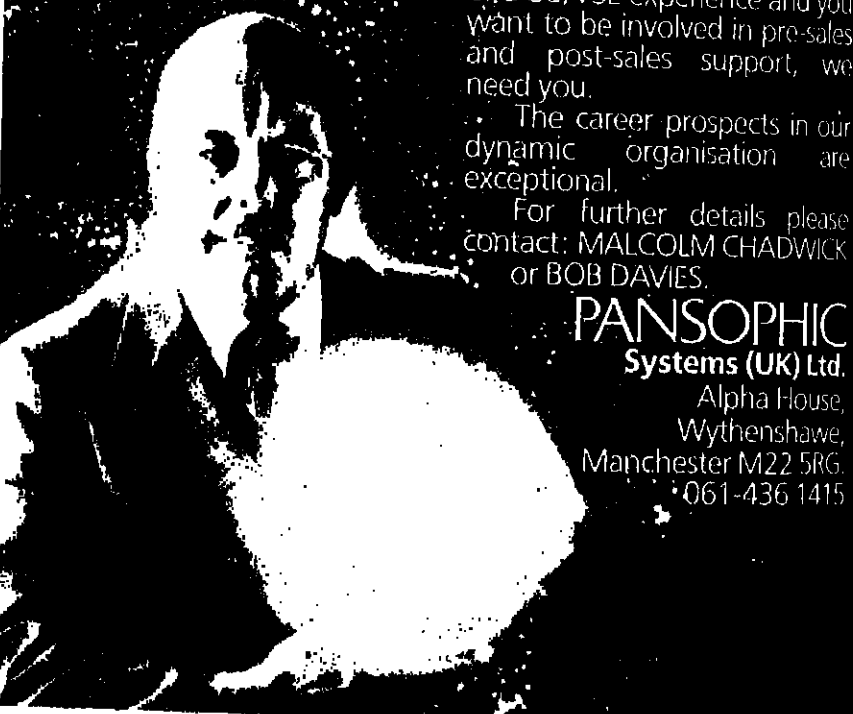
The sales of our systems software products: EASYTRIEVE, PANVALET, PANEXEC, PANAUDIT and PANRISK exceeded £1M in the UK last year and our current plans are very ambitious.

If you have good knowledge of our products or OS, MVS, or DOS/VSE experience and you want to be involved in pre-sales and post-sales support, we need you.

The career prospects in our dynamic organisation are exceptional.

For further details please contact: MALCOLM CHADWICK or BOB DAVIES.

**PANSOPHIC**  
Systems (UK) Ltd.  
Alpha House,  
Wythenshawe,  
Manchester M22 5RG.  
061-436 1415



**EXCELLENT**  
**CONTRACTING OPPORTUNITIES**

Our immediate domestic and international consulting needs are detailed below. If you are of a professional disposition, skilled and dedicated, and wish to join our growing permanent or contract staff, please contact us in respect of these and future opportunities.

International		
System 34/COBOL	Consultants and Programmers	Caribbean; Africa;
MARK IV	Consultants and Programmer/Analysts	Europe
IBM/COBOL	Programmer/Analyst	New York; Texas;
IBM	Senior Analyst	Paris; Oman
IMS or TOTAL	Analyst and Programmers	Africa
		Oman
		Holland
U.K.		
MARK IV	Programmer/Analysts	London
COBOL/CICS/DLI	Senior Programmer	N. West; Essex
ASSEMBLER/CICS/DLI	Programmer	Essex
RPG/System 34	Programmer/Analyst	London
IMS	Designers, Analysts, Programmers	S. London; London
COBOL/UNIVAC/EXEC	Programmer/Analyst	Essex
HP3000/COBOL	Programmer/Analyst	London



For more information telephone:  
Alan King  
TANGENT COMPUTER SERVICES  
102/104 South Street  
Dorchester, Dorset  
Tel: 01258 760291

**Senior**  
**Analysts**

**Pkge £10-11,000**

**NORTH-EAST LONDON**

**New Database Projects—4 year**  
**development plan on ICL 2956**

**Benefits**

- Over 5 weeks Holiday
- Flexitime
- Subsidised Restaurant
- Sports & Social Club on site
- Free Car Parking

**Location**

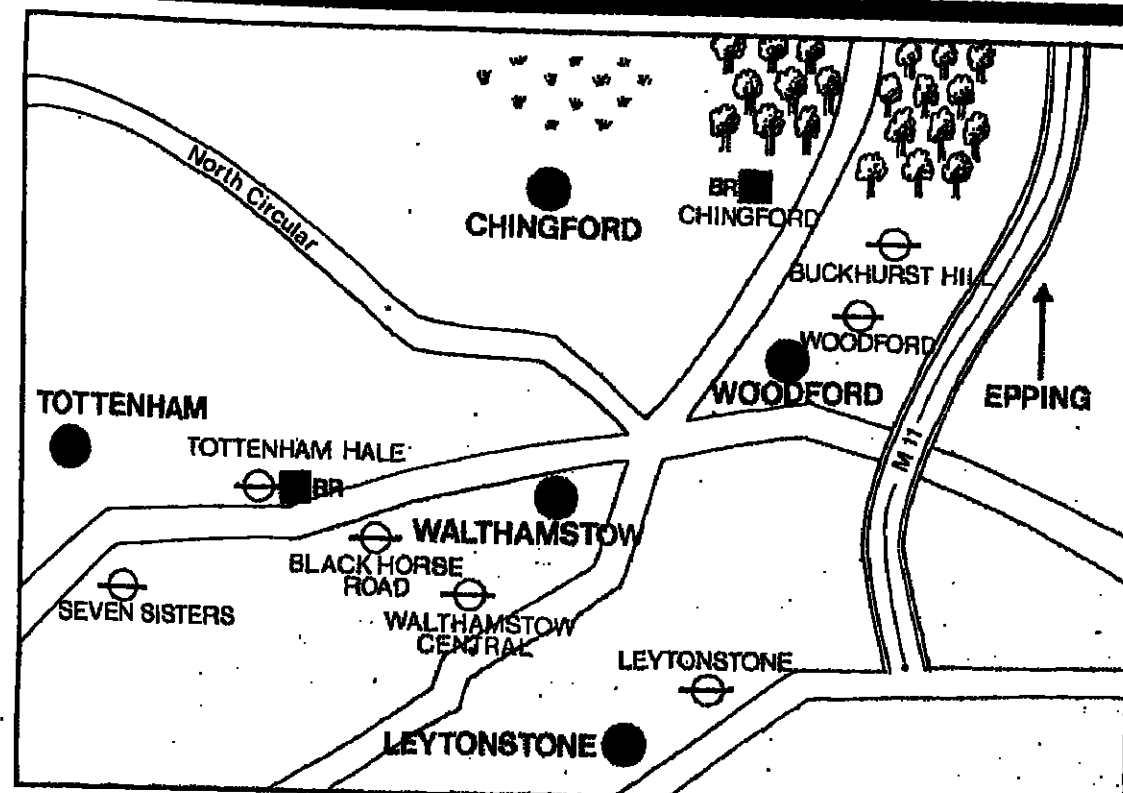
Conveniently situated near the end of the A11/M11 and close to the North Circular Road, but just 20 minutes from Euston by tube on the Victoria Line.

**The Environment**

Good office conditions, a friendly working environment with co-operative, committed users.

**The Job**

To lead a project team of around five analysts and programmers, carry out feasibility studies and control a wide range of new database projects through to implementation.

**The Requirement**

Database and ICL experience is not a pre-requisite since training will be given. You will however, need the technical skills and background to advise, help and direct users, plus the man management skills to lead a medium sized team.

**Action**

Telephone or write to CAPP Associates, quoting ref: CW111-1T, they will provide you with additional information. All interviews will be conducted at the client's premises in North London.

**CAPP**  
**ASSOCIATES**  
**01-686 9693**

Capp House, 96 South End, Croydon CR9 3SD

Computer and Professional Personnel Consultants

THE UNITED KINGDOM ATOMIC ENERGY AUTHORITY

**Computer Scientists**  
**For Oil Reservoir Applications**

The Winfrith establishment is a major user of computers for research and development in the United Kingdom. Large scale numerical studies on oil recovery utilise a mainframe configuration at Harwell consisting of a dual IBM 3033 which is shortly to be enhanced by the addition of a CRAY processor. A Perkin-Elmer minicomputer is based at Winfrith in communication with the mainframe to drive a number of advanced graphics devices, including colour graphics. A dual ICL 2976 mainframe system is also available on the Winfrith site.

The successful applicants would undertake software developments in support of scientists engaged in the large-scale computer simulation of oil reservoirs. Programming would be mainly in Fortran.

Although experience in programming on minicomputers or mainframes, and with graphics software, would be an advantage, we would also be interested in hearing from those with user experience in computing systems who would like to move into the software field.

Candidates would be expected to have at least a BSc pass degree or HNC in an appropriate subject. Appointments will be made to the Scientific Officer grade, with salaries currently in the range of £5,150 to £6,935 depending on age, qualifications and experience. The Authority also offers an attractive package of benefits including an excellent contributory superannuation scheme.

The Winfrith establishment is situated in pleasant rural surroundings close to the Dorset coast. There are excellent recreational and residential amenities in the surrounding areas from Bournemouth to Dorchester and Weymouth.

Please write for an application form to the Appointments Officer (A), Personnel Branch, AEE Winfrith, FREEPOST D0140 Dorchester, Dorset DT2 8DH. Telephone: Dorchester (0305) 3111. Extn 3049 (Ref: WA 346/3)

**Winfrith**

**Programmers**

**BIGGLESWADE**  
**£5,500-£8,500 plus bonus**

We are looking for people with a minimum of 1 year's proven programming experience preferably in one of the following areas:

- ★ ICL 1500.BTL
- ★ ANY M/C ASSEMBLER
- ★ ANY M/C BASIC

All successful applicants will demonstrate that they have the potential to develop their own skills and the more experienced applicants must be able to work with the minimum of supervision whilst providing assistance to other programming staff.

**BECOME PART OF OUR SUCCESS STORY**

**PICK UP THE TELEPHONE NOW**

Contact either: Alan Jephcote or Bill Brett,  
Lloyds Bank House, 39 High Street  
Biggleswade, Beds.  
Telephone (0767) 316286

**Barron**  
**McCann**  
Limited

Computer Systems and Consultancy

Jeffie 1134



# DATA PROCESSING OPPORTUNITIES

# USA

special editorial  
feature - MAY 28 issue.

COMPUTER WEEKLY - Britain's largest circulated computer publication - will publish a special editorial feature in the May 28 issue designed to outline the career opportunities for fully qualified and experienced data processing personnel in the United States of America.

The current international shortage of data processing staff is likely to remain a problem for the foreseeable future becoming increasingly acute with the growth of computer installations. The prime objective of this feature will be to create a greater awareness amongst readers of the scope and job opportunities available in the USA.

COMPUTER WEEKLY has a circulation of 400,000 - the largest of any comparable journal in the U.K. Equally important, readership dominates all the major computer magazines in the computing field, while the newspaper leads all other journals in the field of computer management, systems analysis, programming and operations staff.

If you are currently looking for personnel for your company, why not take advantage of this special feature and advertise your requirements to the thousands of potential candidates in the USA. This special section titled 'Career Opportunities in the USA' will be included in the May 28 issue of the journal and will be available to your company free of charge.

Advertisements for this special feature will be accepted on a non-exclusive basis and will be available to all readers of the journal. The cost of advertising is £100 per line for 10 lines or £1,000 for 100 lines. The cost of advertising is £100 per line for 10 lines or £1,000 for 100 lines.

Should you require further information, please contact the editorial office at 01-252 1234 or write to the editorial office at 01-252 1234.

# MODUS

International Personnel Consultants  
Modus Management Services Limited  
148 Watling Street, Radlett, Herts. WD7 7JH  
Telephone: Radlett (09276) 3077

## Software Project Leader

To organise and control software implementation on a totally new mini.

Northern Home Counties £10,000 - £12,000

This is a newly created position, ideally suited to someone with both in-depth software development experience and good management skills who wishes to concentrate on developing a management career whilst remaining technically involved in leading-edge technology.

The initial task involves a large amount of detailed planning to achieve the implementations of existing software and utilities on a new generation of minicomputer. The appointee will additionally be managing a team of ten software programmers and designers and be responsible for both technical control and line management of the team.

Career prospects in this growing and increasingly successful Company are superb, with good salaries and benefits (including relocation if required) to match.

## Dual Processor Systems

New developments of mini-controlled networks.

North London £11,000 - £14,000

Our client seeks high level systems designers and consultants to contribute to - and advise on - the development of a number of dual processor controlled, continuous operation data networks, which are to be front-ended to several large mainframes. Essential experience must cover either extensive network design from the software point of view, or, in-depth knowledge of one of the newer dual processor minis such as Tandem or Christian Roving. Experience of both areas would be extremely well received.

Excellent salaries are on offer, with relocation if required, plus career prospects which could take one to technical levels paying £18,000 to £20,000.

## Project Leader - Comms.

Project Management in a wholly development environment.

Herts. border negotiable c£11,000

Anyone seeking a senior position within communications and advanced peripheral development cannot fail to be impressed by the scope and challenging career prospects available in this Company. Communications work will include FEP's, terminal software systems, RJE and network architecture. The peripherals section will encompass new terminal devices of every type, interface software, diagnostic and systems design.

Candidates must have a degree and at least five years experience in a development environment including some background of project management. Although the emphasis is on software ability, some contact with hardware would be an added bonus. A high level of motivation and enthusiasm is sought plus the ability to deal with multiple simultaneous tasks. First class career opportunity. Generous relocation package offered where appropriate.

Consultants: - Mike Creamer or Andy Wright

If the advertised positions do not match your experience or aspirations, Mike and Andy are always available for a confidential discussion of the possibilities. An informal meeting - often an essential part of the process - can be quickly arranged.

## Systems Analysts

Insurance Company - long term, stable career prospects.

Surrey c£9,000

Well established and reputable insurance Company is seeking a number of good Analysts to assist in the development of new on-line systems, particularly in the financial and management information systems team. Company uses COBOL on an ICL 2900 system, and a previous track record in this sort of environment would be ideal.

Candidates will be Analyst/Programmers or junior Business Analysts with at least 18 months systems design experience, preceded by some COBOL programming. A knowledge of database would be welcome plus experience of screen design and on-line techniques. The ability to liaise with user departments and conform to existing design procedures is essential.

## Senior Programmers - Project Leaders

A magnificent opportunity to move over to Europe.

Benelux £15,000 to £25,000

This manufacturer of computer based high technology systems is recruiting a team of people to undertake various enhancements and systems development work in the European commercial d.p. centre. The Company has two IBM 4300 machines running under DOS/VSE, with CICS being used extensively. The centre is essentially a COBOL workshop. The team will range from Senior Programmers to Project Analysts, headed up by a Project Leader. Included will be a Senior Systems Programmer.

Candidates must have experience in a large IBM site, preceded by a formal qualification, preferably a degree - this is certainly the case for the more senior positions. Naturally, a track record of project involvement is essential, preferably in the commercial area of manufacturing. Programmers must know CICS intimately and be able to lead others. Interviews in London during April.

## Senior Support Consultant

Pre and post sales support plus other wider responsibilities.

Herts. £10,000 - £11,000 + Car

This position is akin to a Project Management post since the appointee will not only be involved in establishing user requirements, writing proposals and carrying out initial design but will also have responsibility for overseeing the systems development at each site. In addition, he or she will have both marketing and product development responsibilities - great for career progression.

Essential experience required by the Company includes team/project leadership, commercial mini systems development with programming in the background. Candidates, with additional distributed processing and comms. knowledge would be extremely well-viewed.

## HEXAGON CONTRACTS from £300 to £750 p.w.

IMS/ADF COBOL PROGS	12 Mths +	8100 DPPX COBOL/DPCX ASSEMBLER	8 Mths +
CICS/DLI COBOL ANALYST/PROGS	3-6 Mths +	PROGS	3-6 Mths
HONEYWELL To work on QPS 8/20		88800-GEMCOS COBOL DMS II PROGS	Indef.
DM4 ANALYST/PROGS	12 Mths	MARK IV PROGRAMMERS	Indef.
IMS DB & DC SYSTEM DESIGNERS	6/12 Mths	UNIVAC 1100-COBOL DMS1100 TIP	4 Mths
INSURANCE & BANKING ANALYSTS	3-9 Mths	NEAT 3 PROGS	4 Mths
HP3000-COBOL IMAGE, QUERY, VIEW	8-12 Mths	SYS 34-38 RPGII, RPGIII PROGS	3 Mths +
IMS DB/DC Troubleshooters	Indef.	MACRO 11 & PRIME SYSTEMS PROGS	3/6 Mths
		VME/B, FORTRAN PROGS	Indef.

To discuss these and many other contract opportunities, please call any weekday up to 6 p.m.

## COMPUTER SERVICES MANAGER

Experienced person required to take over small but expanding DP department currently using Honeywell Level 82 main frame, working mainly in an on line environment. The person will be required to plan, direct and co-ordinate the organisation's data processing service in accordance with the objectives laid down by the Board. The company is in an interesting stage of expansion and real opportunities exist for the right person. Salary by negotiation, company car, contributory pension scheme are included in a generous package.

Please reply in the first instance with full C.V. marking the envelope 'Private & Confidential' to the General Manager.

Cambridge Jackson Limited

Bayliss House  
Hurst Street  
Birmingham B5 4BT  
A Leasing Unit of a Company



# No longer a necessary evil — attitudes are changing to contract staff

by Ian Humphries

WALK into the majority of computer installations in the UK and the chances are that many of the staff you see won't be permanent. They'll be contract staff.

The situation has evolved gradually, and so has the criticism levelled at contract staff, once thought of by many as simply a necessary evil — loners, with no allegiance to anyone but themselves.

Fortunately, attitudes are changing and this myth, in most cases both unjustified and unrealistic is ready to be exploded. It is now being realised that contract staff can make a real contribution and bring significant benefits to the performance of a computer installation.

The role they can play is starting to be appreciated, rather than tolerated, and the fact that others are now understanding why programmers decide to work on contract will help enhance their professional status and improve their acceptability. In fact, the modern contract programmer is a descendant of the journeyman of the Middle Ages: a skilled artisan, confident in his abilities, who travels from job to job playing his trade. The journeyman was

respected by his peers and employers alike, and it is only right that his modern counterpart should receive the same respect.

Why a programmer should choose this way to earn his living must be considered. Wrong assumptions are often made, which give the contract worker a bad name with employers and which can tempt the wrong type of person to contract work.

The general belief seems to be that he is taking advantage of a situation in which skilled people are in short supply, to make a "fast buck". Well, fast buck operators don't normally last long in any field — and yet many contract programmers have been around for more than ten years!

Other imaginary reasons thought up by others include a chance to take it easy, or buck discipline, or escape responsibility.

In reality, the situation is somewhat different. Writing computer programs can be, and largely is, a one-person task. With a good specification the task can be accomplished in complete isolation; a pattern that in some cases can also be extended to the analysis and design stages.

Indeed, on occasions a whole project is best divided into parts and tasks undertaken by people with the right skills and experience. And when that right person is not available inside the company, then a contract person can be used effectively in this situation, as an expert in his chosen field.

**It is a role that demands single-minded application and an independent nature as well as a high level of competence.**

From experience, the main motivation of contract programmers is to continue to do what they do best — to use their knowledge and skills to do what they enjoy most, that is, specialising. Often, they are too specialised to be taken on as permanent staff by one company, but not too specialised to be employed full-time by many companies in succession.

It is a role that demands single-minded application and an independent nature,

as well as a high level of competence. As for other motives — well, variety can be experienced in terms of a changing environment, but as an admitted specialist who enjoys doing the same kind of job over and over again because that is the job he likes — that will be the only variety to be found.

It is vitally important that any prospective contract programmer seriously considers all these aspects, since to choose for the wrong reasons will probably result in choosing the wrong type of career.

It may seem that money has been dismissed as an important factor. This is because the money simply is not a good enough reason for most people. And indeed it should not be, if you are not suited to the life, you will not like it, and that is that. But capable contract programmers can certainly earn a lot, and tend to last for a long time.

Although contract programmers may seem to be a recent addition to the computing scene, this is not so and it is possible to look at many who have spent years assigned to contract work. This company could quote many examples, not

untypically a "journeyman programmer" who now has some 12-plus years' experience. During this time he has completed over 40 assignments, working mainly through the same agency and building up mutual confidence with both the agency and its clients.

**These staff are their own best salesmen, when backed by a reputable service which is capable of understanding the client's needs.**

Indeed, confidence is the key to successful contract work. The programmer must be confident in the agency he chooses to ensure that his skills are utilised to everyone's best advantage;



Ian Humphries (left) is managing director of Knight Computer Services. He sees the contract programmer as a descendant of the medieval journeyman. The contractor, he says, is "a skilled artisan, confident in his abilities, who travels from job to job playing his trade".

□ □ □  
their position in the marketplace?

In this company's opinion, the value placed on contract staff will grow, since buying in a skill for a particular task makes solid economic sense. Many computer users and their personnel management now recognise the usefulness of such staff, to the extent of actively seeking out areas where their skills could be brought in and put ahead to do so.

It should be emphasised that the strength of this sector will no longer depend on the non-availability of skilled staff, as in past years. It will exist because it best suits the work in hand and this being so, it will need to offer a competent, professional service.

In the long run, the reputation suffered or enjoyed by the contract programmer will depend on the work he does. These staff are their own best salesmen, when backed by a reputable service which is capable of understanding the client's needs.

This company has experience enough to know that there are enough contract workers whose performance can be guaranteed to safeguard the future of the contract sector — and to ensure that the myth of the maverick will soon be dispelled by the modern journeyman programmer.

# COMPUTER ELECTRONICS RECRUITMENT



**HOLLAND** c. DFL 6,000 per month + car  
**MVS Systems Programmer**  
3 years' minimum experience using MVS systems; must have command of the Dutch language, not necessarily fluent. Based mid-Holland.

**LONDON, CITY** c. £12,000 p.a.  
**Database Designer**  
With knowledge of IMS or other databases preferably, gained in an IBM or similar environment. Degree/HNC combined with at least 2 years' database experience.

**THE HAGUE** c. £18,000 p.a.  
**Applications Programmer Analysts**  
With at least 5 years' D.P. experience and at least one year's experience in a T.P. environment using PL/I or Cobol with IMS DB/DC.

**SOUTH COAST** c. £10,000 p.a.  
**Coral Programmers**  
With 3 years' experience to work on interesting projects; good promotion prospects and opportunity to work abroad at later date.

**GERMANY** c. £24,000 p.a.  
**Univac 1100 Programmers**  
DMS or TIP experience with at least 3 years' 1100 experience. Languages not essential, but knowledge of German an asset.

**LONDON WEST, SOUTHERN ENGLAND, MIDLANDS** c. £15,000 p.a.  
**3C Programmers, Analysts/Programmers, Designers**  
To work on various assignments. Specific or general experience of either software engineering — design, link communications, packet/message switching, image processing, networks, etc. At least 2 years' experience of mainframe, mini, or microprocessor experience combined with Degree or similar qualification.

**GERMANY** c. £15,000 p.a.  
**Systems Programmers**  
For multi-national based in Germany. Should have at least 2 years' experience of systems programming using DOS/VSE, CICS and DL1; knowledge of DOS/VSE and SPO-E useful.

**SWITZERLAND** c. £24,000 p.a.  
**Univac 1100 Systems Programmers Analyst/Programmers and Programmers**  
Minimum of 3 years' experience of DMS or TIP. Knowledge of German, French or Italian an asset, but not essential.

**BELGIUM** c. £22,000 p.a.  
**Systems Programmers — (Telecommunications)**  
To be responsible for a European network using 200+ terminals; must have a minimum of two years' experience in an IBM VTAM or TCAM environment, preferably under MVS although OS/VSI is acceptable; preferably knowledge of Dutch language.

**SAUDI ARABIA** c. £22,000 tax free  
**Systems Analysts/Programmers**  
With knowledge of Hewlett Packard 1000E Image 1000 Data Base System and Fortran using RTE-IVB Operating System.

**DUBLIN** c. £14,000 p.a.  
**Programmers IBM OS/VSE**  
One year's experience in similar environment. Opportunity to work elsewhere in Europe at a later date.

**SAUDI ARABIA** c. £22,000 tax free  
**Business Systems Analysts**  
With demonstrable abilities in problem analysis and resolution; at least 6 years' analysis experience in such areas as inventory control, retailing, evaluation of EDP systems, utilities management. A Degree in Business Admin., Computer Science, Engineering or similar is required. Knowledge of Mark IV or similar high level query is an asset.

**WEST LONDON** c. £17,000 p.a.  
**Systems and Programming Consultants**  
Minimum of 3 years' commercial experience. Detailed experience of one high level and knowledge of one low level language. Project leadership an asset — also knowledge of French, German or Dutch.

**SAUDI ARABIA** c. £22,000 tax free  
**Analyst/Programmers**  
With background in Mark IV and OS/MVS/JES2. Exposure to ASM2 archive system and ACF2 security system helpful — preferably with knowledge of PL/I, Cobol, Fortran, Librarian or DASD/TSO system, obtained on a large IBM OS system, with Data Base and T.P. applications.

**A new specialist unit within one of Britain's major human resource groups**

**Middle to top-level appointments**

**Job-to-people matching**

**UK and International Connections**

**Act Now!**

Send details of your career to date — or telephone Bill Ryan, Senior Consultant, Charles Barker Management Selection International Limited, 30 Farringdon Street, London EC4A 4EA. Telephone 01-236 0588/9 during normal office hours, or 01-883 3218 evenings and weekends.

**Charles Barker**  
MANAGEMENT SELECTION INTERNATIONAL LTD

## Freelance Assignments

We need reliable professional people to work on interesting contracts in London and the Home Counties

- ★ BUREAU SUPPORT — OS, VM/CMS
- ★ SNR. PROGRAMMER — 8100, DPPX
- ★ ANAL/PROG — COBOL, CICS
- ★ ANAL/PROG — SYSTEMS IMPLEMENTATION
- ★ PROGRAMMERS — COBOL, CICS

Contact us now and reap the benefits of working for a Software House  
Ring: Sheila Fox  
Link Associates Limited  
24a High Street, Chesham, Bucks. (02405) 4922



## CONTRACTS

**HONEYWELL IDS/TDS ANALYST/PROGRAMMER**  
Starting April for London and South-East

**NCR NEAT 3 LEVEL 2 PROGRAMMERS**  
Starting A.S.A.P. for London

Phone NOW! 01-423 2166 or 01-423 1963

**VIKING RECRUITMENT LIMITED**  
Viking House, Peterborough Road, Harrow, Middx. HA1 2XL

## CONTRACT

**ASSEMBLER SUPPORT PROGRAMMER**

4 to 5 years' IBM, DOS/VSE Assembler. Knowledge of PL/I, CICS, VSX or VSX/2 not essential. Previous experience in a support role also useful. Responsible for day-to-day failures and to implement minor enhancements. Must live within one hour's travelling distance of Maidenhead. **START A.S.A.P.**  
Contact: Daphne Jones

**FORCE 8, Computer Services**  
8 Mint Walk, Croydon 01-680 3761

## CONTRACTS

**WEST OF LONDON**  
Technical Data Base Designer for IBM environment. Immediate start.

**WEST OF LONDON**  
IBM COBOL DOS experience. April/May start date.

Please telephone Joan, Paul, James, on AMERSHAM (02403) 22201

**PROGRAMMING & SYSTEMS LTD**



IBM SY 34 RPG11 PROG  
IBM OS PL1 IMS PROG  
IBM OS/DOS ASB CICS PROG  
IBM OS/DOS COBOL CICS or DL1 PROG  
IBM DATABASE & ON-LINE EXP. BY ANAL  
IBM INSURANCE EXP BY ANAL  
IBM CICS EXP BY ANAL  
UNIVAC 1100 EXED FORTRAN PROG  
HONEYWELL COBOL OR BASIC PROG  
PDP11 REX11 MACRO FORTRAN PROG  
ANAL/PROG WITH GOOD RANDOM EXP

Immediate start to 12 months. New contracts available. **Phone JOHN SHARPE immediately for further details.**

**Computer Search**  
01-404 0152

## IRISH RECRUITMENT FEATURE

**The Irish Recruitment feature will appear April 9th issue**

**For your advertisement requirements contact Owen Kelly on 061-872 8861**

**COMPUTER WEEKLY**



# Senior Software Specialist upto £11,000

## MIDLANDS BASED RETAIL MANUFACTURING & DISTRIBUTION GROUP

MICROS

MINIS

POINT-OF-SALE



Specialist Computer Recruitment Ltd

For these advanced projects, we require special people; people with experience of designing and developing on-line and real-time commercial and manufacturing systems on mini computers, whilst demonstrating practical ability in real-time operating systems and data communications.

Our immediate plans include the design and implementation of standardised commercial micro processor systems within numerous distributive sites. These systems will cater for the day to day needs of these operations as well as capturing data for central systems, which are processed on mainframe computers.

Additionally, Point of Sale (POS) equipment will be installed in a large number of retail sites.

The successful applicant will be part of a highly professional technical support group and will be responsible for providing specialist technical expertise on micro and mini computer software and associated networks.

Our expanding Group of Companies offers particularly good prospects together with an excellent working environment, with a considerable amount of new and advanced equipment both in use or planned for delivery in the near future.

If you have practical experience to match our requirements, and seek an interesting and responsible position in an Organisation committed to the extensive implementation of such advanced facilities, contact our Advising Consultant, Ian Payne, 021-236 3781 (24 hour answering service) or 0827 282430 (evenings and weekends).

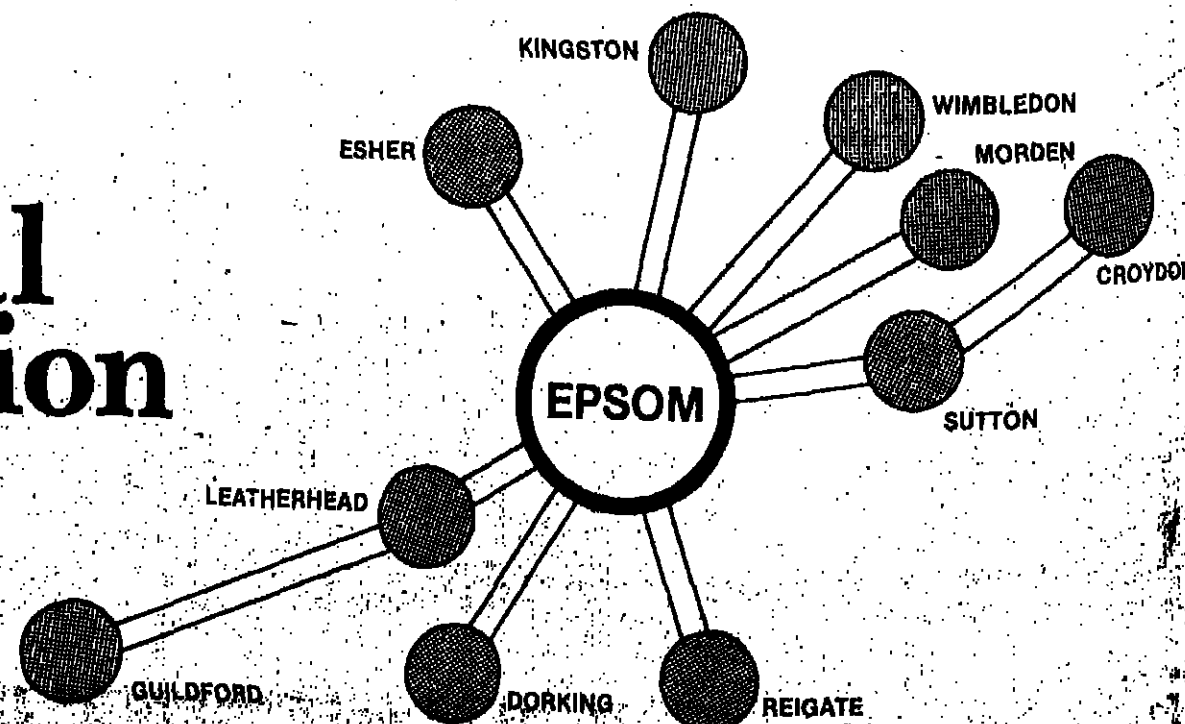
London 01-935 0671 3 Mandeville Place, Wignmore Street, London W1M 5LB.  
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY.  
Manchester 061-833 0427 Blackfriars House, The Personage, Manchester M3 2JA.  
Brussels 010 322-840 7161/71 Avenue Louise 327, Boite 4, 1050 Bruxelles.  
Amsterdam 010 3120-7808/47 Willemsparkweg 92, 1071 H.M. Amsterdam.

# Epsom Financial Organisation

Work locally on a new ICL ME29 and enjoy job security in a friendly expanding company.

Pension funds are a growth industry. Increasing size and sophistication demand new techniques. Our client's funds include one of the twenty largest in the country. Continued expansion has necessitated a further hardware upgrade and an ICL ME29 under TME will arrive in April. Program development is continuing including on-line applications and the evolution of an Investment Accounting system, ensuring interesting developments over the next several years.

The company has comfortable offices in the attractive market town of Epsom, with good rail and road links. The Computer Department is friendly and professional with a progressive attitude towards training and career development, with six monthly salary reviews, 4 weeks holiday, 50p EVs, good pension scheme etc.



## ANALYSTS c. £10,000

You will be involved directly with users to establish requirements in major business areas, carry out feasibility studies and control project to implementation. At least 2 years practical experience is required, ideally gained in a professional COBOL environment.

## COBOL PROGRAMMERS up to £8,500

Applicants should have three years COBOL experience, ideally gained in an on-line environment.

For more details or to arrange a meeting, after office hours if necessary, please write or telephone (24 hour answering) quoting ref. CW 109-IT.

## CAPP ASSOCIATES

01-686 9693

Capp House, 96 South End, Croydon CR9 5SD  
Computer and Professional Personnel Consultants

## Interactive Graphics

As part of a drive to make the power of interactive computing available for research and development in universities, the Science Research Council has set up a national Interactive Computing Facility based on multi-user mini computers situated in university departments and inter-connected via the SRC X25-based network. Connection is also provided to the powerful batch facilities (two IBM 360/195 and a 3032) at the Rutherford and Appleton Laboratories. The growing use of high-powered single user systems is expected in the future.

Many application areas have an urgent need for a variety of utilities to assist in the development of specific applications packages. These include command language interpreters, standard program environments for interaction and graphics libraries.

Applicants should have a degree in computing or some related subject.

Posts are based at the Chilton site and will be in one of the following grades:

Scientific Officer.....	£4,809-£6,480
Higher Scientific Officer.....	£6,075-£7,999
Research Associate (fixed 3 year term).....	£5,862-£8,006

Appointment to a salary scale point above the minimum may be considered for candidates with good qualifications and particularly relevant experience/specialist training.

The Laboratories are a friendly community with their own restaurant and sports facilities nearby. We offer excellent working conditions and benefits include a local transport service, generous holidays, sick leave allowance and a non-contributory pension scheme.

For an application form please write to: Mary Elizabeth Fry Personnel Group, Science Research Council, Rutherford and Appleton Laboratories, Chilton, Didcot, Oxon OX11 0QX, quoting reference: VN932. Closing date: 24th April, 1981.

Rutherford  
and Appleton  
Laboratories

## FBC Programmer

FBC Limited is a new company owned by The Boots Company Limited and Fisons Limited. In FBC, Boots and Fisons have combined their assets and experience in agrochemicals and certain of their specialised interests in industrial chemicals.

FBC possesses a broad and powerful research base and the resources to manufacture, develop and sell products in all important world markets.

The Company has its Headquarters at Hauxton, near Cambridge and a research station at Chesterford Park, near Saffron Walden, Essex, where the facilities for research and development work in agrochemicals are amongst the best of their kind in the world.

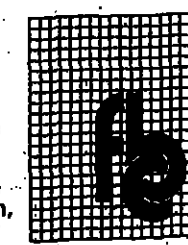
We have a vacancy for a Programmer to join the Data Processing Section at Chesterford Park Research Station. The successful candidate will join a small team responsible for the design, implementation and maintenance of systems for collecting, storing and retrieving research data.

Applicants, male or female, should be under 30 years of age with programming experience in either FORTRAN or COBOL and preferably experience of one or more of the following areas: Data Management, Information Retrieval, Laboratory Automation and Statistical Analysis.

We offer a competitive salary supported by a substantial range of fringe benefits associated with a major industrial company including assistance with relocation expenses where appropriate.

Please write with details of your career to date including current salary to:

Peter England, Personnel Officer, FBC Limited, Chesterford Park Research Station, Saffron Walden, Essex, CB10 1XL. Tel: Saffron Walden 30123.



## Project Leaders - Analyst/Programmers

Your future could be here.

Our clients, based in the West of Scotland, are part of a multi-national concern with expanding international sales. A major share of the UK market and increasing export figures have led to high profitability, stability and a work force totally unaffected by the current recession.

The first installation, offering batch and on-line processing is therefore building and well to the company. This is reflected in the quality of staff, who receive individual recognition and excellent career prospects.

PROJECT LEADER (£5000 + car allowance) - This is a high level position and offers a high level of responsibility and a high level of reward. The successful candidate will be able to work quickly and efficiently and have wide ranging experience including a programming background.

SENIOR ANALYST/PROGRAMMER £3,000 - The successful candidate will already have experience of systems design in a commercial or production environment.

Situated close to one of Scotland's many beautiful areas our clients offer a generous relocation package which is applicable. If you want to be part of a thriving and successful company and be rewarded for your own ability and efforts please David Hicks or write to him at

Harrison Cowley Executive Selection

London Borough of Enfield  
Education Department  
SOUTHGATE  
TECHNICAL COLLEGE  
Principal: W. A. G. Easton, MA  
Cenu. FIMechE FRSA  
Ref: B13

## LECTURER GRADE I

required from 1 September 1981 to teach COMPUTER STUDIES and DATA PROCESSING to a range of courses including GCE 'A' level, BECEET Diploma and RSA. A knowledge of BASIC and COBOL is required and experience with a PDP 11/40 computer an advantage. Applicants should preferably have previous teaching experience or have completed a training course.

Salary scale (including London Allowance) - Scale currently under review. Lecturer Grade I £5,181-£8,583 - the initial placing on this scale depends on qualifications and experience.

Application forms and further details (see marked with job reference) obtainable from the Principal, Southgate Technical College, High Street, Southgate, LONDON N14 6BB, to whom they should be returned by Friday, 24 April 1981. (5020)

NENE COLLEGE  
NORTHAMPTON  
School of Mathematics  
Management and Business  
Studies

## Required for 1 September 1981 SENIOR TUTOR IN OFFICE STUDIES

to lead a small team currently providing Personal Assistant and Secretarial courses, and course modules for the BEC Higher Diploma, and shortly to develop degree level work in Office Studies. Requirements: (1) Degree or equivalent qualifications; (2) Knowledge and technological experience relevant to the modern electronic office; (3) Ability to teach in an appropriate Office or Business Studies discipline. The appointment will be made at either the Senior Lecturer or Lecturer 2 level.

Salaries: Senior Lecturer: £8962-£11,295 plus 7½% award. Lecturer 2: £8,012-£9,702 plus 7½% award. For further information and application form to Dr. A. J. Wood, Dean, School of Mathematics, Management and Business Studies, Nene College, Houlton Park, Northampton NN2 7AL returnable by 27 April. (5073)

## UNIVERSITY OF BRADFORD LECTURESHIPS IN COMPUTER SCIENCE

The Schools of Studies in Computing offer MSc, BSc Honours and BSc Honours with Honours degrees. Candidates should be able to demonstrate excellent academic ability and a strong interest in computer science. The successful candidate will be required to teach and supervise students in the field of computer science. The successful candidate will be required to teach and supervise students in the field of computer science. The successful candidate will be required to teach and supervise students in the field of computer science.

## PROGRAMMER Burroughs hardware 2½ years COBOL/MS 2 experience - to £10,000 p.a.

CITY CENTRE BUREAU  
Tel: 282-1788 (5024)

## LOTHIAN REGIONAL COUNCIL DEPARTMENT OF EDUCATION STEVENS COLLEGE OF FURTHER EDUCATION

## Computer Operator

The College Department includes a full range of courses in the field of computer studies and applications. The successful candidate will be required to teach and supervise students in the field of computer science. The successful candidate will be required to teach and supervise students in the field of computer science. The successful candidate will be required to teach and supervise students in the field of computer science.

**Nantwich**  
Serving the North & Midlands  
OCC Computer Personnel  
5 Hospital St. Nantwich Cheshire  
0270 627 206

## Univac 1100 Systems Designers Copenhagen to £16,000

A major international systems consultancy seeks a number of suitably qualified systems designers for development work on a large R.T. system for a major Danish user. Candidates will need a valid background in Univac 1100 together with exposure to DMS 1100 and TIF. Candidates should also have school-age children. The project positions will be on a permanent basis and should last two years after which secondment to other operating groups would be a possibility. Ref: 2/1, Brian Harris.

## DOS/VS Systems Programmers Kuwait to £16,000 tax free

Our client, a major Kuwaiti financial institution, seeks a number of well-experienced IBM systems staff to maintain existing positions at the headquarters in Safat. Candidates should have five years' plus experience, using DOS/VS or VSE VM or CICS. Free married status accommodation is provided as is a contribution towards the private education of any children. Additionally a 15% bonus is paid. Ref: 2/2, Brian Harris.

## D.G. Software Engineer Central Lancashire c. £8,000+

Our client, a dynamic young company specialising in the marketing and development of mini/micro computer based R.T. systems - particularly graphics and process controllers - seeks a software engineer with sound experience of Data General Nova software, particularly RDO, AOS and DG Assembly, for support and development work at their plant. Benefits include a bonus system plus relocation expenses where appropriate. Ref: 2/3, Brian Harris.

## Programmer Analysts Rhineland c. £13,000

A multinational manufacturing organisation based in an attractive part of Germany wishes to recruit two Programmer Analysts to work on manufacturing systems on their IBM 4341. Candidates should ideally be graduates with experience in some of the following areas: PLI, COBOL, ASSEMBLER, CICS, COMICS, KAPOSS. Candidates must be prepared to learn German. Ref: 2/4, Neville John.

## Univac 1100 Systems W. Germany/Switzerland to £18,500

Our client, a major continental systems house, seeks a number of Univac systems staff for permanent placement on a number of projects in the financial area in the German speaking area of Europe. Candidates should have a strong orientation towards Univac systems being able to show proven ability in one or more of the following areas: DMS1100, TIF, PM58, Univac Assembler or COBOL. Ref: 2/5, Brian Harris.

Merlin Geophysical Co. Ltd. is a small, expanding, British company providing seismic data processing services for the oil industry. We require a

## COMPUTER SERVICE ENGINEER

for maintaining all hardware in one of our processing centres. This hardware consists of Systems Engineering Labs, 32-77 C.P.U.'s, STC Mag Tape, Laser Plotter etc.

Applicants must be single and prepared to work abroad, initially for one year and for shorter periods thereafter. They should have approximately 2 years related experience, including some prior mainframe training and H.N.C. E.E. or equivalent. The successful applicant will be trained on the S.E.L. 32-77 and Peripherals as necessary and can expect many of the benefits associated with large companies plus the satisfaction and involvement derived from working in a small expanding company.

Salary £7,000 p.a. + depending upon relevant experience.

Applications, including curriculum vitae, should be addressed to:

The Operations Director  
Merlin Geophysical Co. Ltd.  
Morris House  
Commercial Way  
Woking  
Surrey  
Telephone Woking 2332

## BOX NUMBERS

Box number replies should be addressed to:  
Box Number  
on Computer Weekly  
Quadrant House  
The Quadrant  
Barton, Surrey GU8 5AS







Cambridge Instruments is an acknowledged leader in advanced technology instruments

### ATE ANALYST PROGRAMMERS

We require ATE Programmers to join a small and dedicated team to write production oriented software programmes, using our highly sophisticated Genrad 175X functional ATE systems.

The ideal applicants should be educated to degree standard with minimum of two years experience of ATE programming on Genrad, Mambrian or Teradyne ATE system. Some knowledge of mini computers and design experience is desirable.

Attractive benefits, salaries and a generous relocation policy are offered by a large international high technology company, which is a major force in a world-wide growth industry.

Applicants should either write or telephone for an application form to John Sissons, Personnel Department

**CAMBRIDGE INSTRUMENTS LIMITED**  
Rustat Road, Cambridge CB1 3QH. Tel: (0223) 42021

6018

### LIVERPOOL POLYTECHNIC COMPUTER SERVICES DEPARTMENT

## PROGRAMMER

£5,952-£6,750 per annum

A new computer system is being installed during the summer to provide interactive facilities for all Polytechnic departments. The new computer system, supporting 64 simultaneous users, will be operating in parallel with the existing 1802A batch system.

The Polytechnic's Computer Services Department was created little over 18 months ago and staffing levels within the department on the programming side are minimal. The successful applicant will be expected to play a major role in the installation of the system and the establishment of an effective computing service for the Polytechnic.

THIS VACANCY OFFERS A UNIQUE OPPORTUNITY TO BE INVOLVED AT THE START OF A MAJOR DEVELOPMENT PROGRAMME. PLEASE QUOTE REFERENCE LP/408

Applications are invited from candidates who have, or expect to obtain, a degree in Computer Science. For further particulars and application form, contact the Personnel Office, Liverpool Polytechnic, Rodney House, 70 Mount Pleasant, Liverpool L3 5UX. Tel: 051-708 6636 Ext 43. Informal details may be obtained from members of the Computer Services Department by ringing 051-207 3581 Ext 123.

60081

### UNIVERSITY OF ESSEX

## LECTURER IN THE DEPARTMENT OF ELECTRICAL ENGINEERING SCIENCE

Applications are invited for the post of lecturer (salary scale £5605-£11675, under review) in the above Department, for appointment from 1 October 1981, in the area of DIGITAL and COMPUTER SYSTEMS. Candidates should have an honours degree, or equivalent, in electrical engineering or computer science, and relevant experience in some branch of computer engineering or computer systems. Applicants with all-round ability in computer systems, hardware and software, are particularly sought; those with a special interest in microprocessor systems, computers in telecommunications, information technology, user interfaces or programming languages are encouraged to apply. The Department of Electrical Engineering Science, specializing in electronics and has research interests in telecommunications systems, instrumentation, computer-aided design, microprocessor applications, and main computer systems.

Applications (nine copies), including curriculum vitae and the names and addresses of two referees, should reach the Registrar (AG/120/CW), University of Essex, Wivenhoe Park, Colchester CO4 3SD, from whom further particulars may be obtained, by 24 April, 1981.

60189

### URGENT - RUSHI - RUSHI

IMS DESIGNER PROGRAMMERS  
COBOL & PL/I PROGRAMMERS  
SYSTEMS ANALYSTS

## COMPUTER ENGINEER

Central Scotland  
£17,000 Package

DML Computers Limited are the sole distributors in Scotland for Storage Technology (STC) products.

DML have been in the IBM plug compatible field for the past four years and, as an extension of their "total sales and service" concept towards clients, they are now expanding their field engineering force.

The successful applicant will be maintaining STC Tapes, Disks, Add-on Memories and Intel microprocessors, etc. Although full product training is available, applicants must have proven experience in the large D.P. environment.

The above package including a quality company car is offered to the candidate with the right experience, initiative and personality. This is an outstanding opportunity for an ambitious and responsible engineer looking to the future.

For further details, phone Alan Smellie or Sheila Price on 031-228 8674, or send a written application to DML Computer Personnel Services, 11 Charlotte Square, Edinburgh EH2 4DR.

All applications will be treated in the strictest confidence. Please quote ref. CW2/4.

10084

## COMPUTER PERIPHERAL SALES

(LARGE SYSTEMS)

Central Scotland  
£25,000 Package

Storage Technology (STC) Disks and Tapes have now been successfully installed across Central Scotland by DML and we are now looking for a top calibre sales person to capitalise on our rapidly expanding user base.

The successful candidate will have an outstanding track record of sales, with integrity in the Large Systems area.

The product range will include Disks, Tapes, Memories, Fast Printers and Communications, and you will have to prove your ability to understand a customer's requirement in this area.

The package includes a quality company car, as well as the ability to sell the "Rolls-Royce" of Discs STC.

## CUSTOMER ENGINEERS

London - Home Counties (6 Offices)  
Train U.S.A.

£9K + O/T + S/B + 2-Ltr. Car + BUPA

Our client manufactures an extensive range of high-performance systems including Real-Time Minis, distributed processing networks, small business systems and many others. Group sales exceed 1 Billion Dollars with over 20,000 installations world wide. Growth and quality are hallmarks of this company offering exciting career opportunities to ambitious engineers seeking new challenge and advancement.

If you have computer/peripheral experience and want to progress your career in a really stimulating environment call Keith Wallis now!

ALLTRONICS PEOPLE, 01-543 4844

10082

Computer Centre - Barking Precinct,  
Longbridge Road, Dagenham, Essex

## Programmer SO1/2

Required to join a team of programmers working in three main areas: Academic Applications, Systems and Management Information. Applicants should possess a degree and be fluent in at least two programming languages (preferably one scientific and one business oriented language). The Centre operates ICL 1904S and PRIME 550 computers with extensive on-line facilities; experience of either of these machines would be an advantage.

The annual inclusive salary is on a scale from £7,953 to £22,219 according to age, qualifications and experience.

For further details and an application form please contact the Polytechnic Personnel Office, North East London Polytechnic, Arts House, 155-156 High Road, Chesham Heath, Romford, Essex RM6 6LX. Telephone: 01-890 7722 ext. 3121 or 3136, quoting reference number 52/500. Closing date: 12th April, 1981.

**NELP** North East London Polytechnic

## WEST COUNTRY

SPOTLIGHT ON TECHNICAL VACANCIES

SOFTWARE PROGS	Coral 66 or Fortran	£neg	GLOS
TECH PROGS	Pascal	to £9K	WILTS
DEV PROG	RT Assembler or Fortran	to £8K	GLOS
HARDWARE/ SOFTWARE ENG	Micros	to £8K	GLOS
AN/PROG	PL/RT Fortran	to £8K	GWENT
SYSTEM			
SOFTWARE ENG	Mini Hardware	£8K+	WORCS
AN/PROG	Fortran	£neg	WILTS
SOFTWARE ENGS	Coral 66 or Fortran	£7K+	SOM
PROGS	Coral 66	£neg	DORSET

AB EXECUTIVE (BRISTOL) LTD, 0272 426631  
YORK HOUSE, BOND STREET, BRISTOL BS1 3LQ

10080

## ★ AMERICA ★ D.P. PROFESSIONALS WEST COAST - USA

Our client is currently in London interviewing for the following positions:

**ANALYST PROGRAMMERS**  
with 3 yrs. + IBM COBOL/MVS (MVT)

**PROGRAMMERS**  
CICS an advantage

**ACP/IPARS PROGRAMMERS**  
with exp. of IBM 3600 & Financial Applications.

**SYSTEMS PROGRAMMERS**  
IBM MVS or ACP exp.

For further information, please phone Lloyd Williams or Lew Barlett on 01-636 1629/627 or at the number below.

**STOP PRESS**  
**BURROUGHS**

We would also like to hear from Analysts, Programmers and Systems Programmers with exp. on Burroughs equipment.

**COMPUTER TWO THOUSAND LTD**  
D.P. Recruitment Consultants

217-218 Tottenham Court Road  
London W1P 9AF

Tel: 01-636 7584 (24 hrs) (0080)



## Computer Development Staff

The County Council Installation is based on ICL 2800 computers supporting a county-wide network of terminals and ME28/2903 local processors and the Computer Development Section is being expanded by TWO ANALYSTS and ONE PROGRAMMER.

Applicants for the ANALYST posts should have at least six years' experience in ICL COBOL and GEORGE3. Knowledge of Financial or Property-based information systems would be an advantage.

These posts are graded SO.1/2 (£7,000 to £8,800 p.a.) with starting point depending on experience.

Applicants for the PROGRAMMER post should have at least two years' experience in ICL COBOL and GEORGE3. Knowledge of MIS, TMS or RP32 would be an advantage. It is a career grade post in the range Clerical 1(b) to AP.5 (£3,500 to £7,500 p.a.) depending on experience.

Assistance will be given towards removal and relocation expenses.

For further information, telephone Mike Fuller on 0872-74282 or write giving full details to the County Treasurer, County Hall, Turo, TR1 3BD, not later than 16th April, 1981. Please quote ref. no. 120 when replying.



## KEEN COMPUTERS NEED MORE STAFF

To expand our operation in Nottingham we urgently need the following staff:

**TECHNICAL SERVICE MANAGER**

This new post in our organisation will be very demanding. Only experienced and ambitious persons will be considered. Engineering knowledge will be necessary.

**FIELD SERVICE ENGINEER**

Field service engineers are needed to work both at our base in Nottingham and in the field. The equipment is interesting and varied. Mainly Winchester Davies and Micro Computers.

**SALES PERSONS**

Experienced Sales Persons with a knowledge of business systems are needed to sell an increasing range of computers. These Sales Persons will be based at our Nottingham showroom and very occasionally required to visit customers premises.

TELEPHONE NOTTINGHAM 583254



## COMPUTER SCIENCE

Applications are invited for a number of full-time permanent positions Assistant Lecturers/College Lecturers in the Department of Computer Science.

The salary scales (under review) are:

College Lecturer IRCB 007-IRC9 008 Bar IRC10-012-IRC13, 168 p.a. (incl. Assistent Lecturer IRC7,021-IRC7,624 p.a.)

Application forms and further details of the posts may be obtained from the undersigned.

Latest date for receipt of applications is MONDAY, 4 MAY, 1981.

M. F. Kelleher  
Secretary

# Analyst

## THAMES VALLEY

to £9,500

Our client, a major manufacturing company, seeks a proven analyst of three or more years' experience, preferably from a programming background, to work on production and stock control systems. ICL-IDMS Data Base experience is essential and previous work in a manufacturing environment is desirable.

Latest state-of-the-art hardware and software include ICL 2966s and an ME29. The right person can look forward to project leadership in the not-too-distant future. For further information contact NEVILLE WAKE.

Computer Search  
01-404 0152

Nonwich House, 13 Southampton Place, London WC1A 2AJ

## Transaction Security Limited

# Advanced Systems Technology

Consultants

c. £13,000 + benefits

Transaction Security Limited is a young progressive U.K. Company, specialising in advanced computer and communications security technology. We have substantial financial backing from the Finance for Industry Group, which is owned by the major U.K. banks and we are planning, with overseas partners, to open an international network of systems houses to specialise in this field.

We are now seeking professional engineers and systems designers who can contribute to our corporate growth in the following fields:

- high integrity fault tolerant computers
- computer networks

- cryptography
- image processing and pattern recognition
- secure operating systems and data base systems
- microprocessor and VLSI technology
- banking automation
- office automation
- factory automation
- defence systems

Candidates with good honours degree or equivalent in electronic engineering, computer science, mathematics and several years' relevant industrial experience should apply, in confidence, to the address below:

Managing Director, Transaction Security Limited, P.O. Box 72, Barratt House, Chestnut Avenue, Guildford, Surrey GU2 5HJ. Tel: (0483) 503363

44-11-20 1.50

## GUIDE TO RECRUITMENT CONSULTANTS IN THE U.K.

LONDON & H. COUNTIES (LH). MIDLANDS (M). NORTH (N). SCOTLAND (S). OVERSEAS (O)

**Computer Professional Recruitment Consultancy**  
"COMPUTER PROFESSIONALS - MAKE SURE WE HAVE YOU IN MIND"  
1944 Office: 0202 774445  
F. P. 0202 774445  
F. P. 0202 774445

**Ivor Norton Management Services Ltd.**  
Recruitment Consulting Division  
22 Shaftsbury Avenue, London W1V 7DE  
Tel: 01-734 8822  
P.O. Box 853, Grosvenor Road, London W1A 0LX  
Tel: 01-734 8822

**COMPUTER INDUSTRY SPECIALISTS**  
SALES • SYSTEMS • MARKETING • ENGINEERING • PROGRAMMING  
INSIGHT MARKETING & PERSONNEL CONSULTANTS LTD.  
AUSTIN HOUSE, CHARLOTTE STREET, MANCHESTER. TEL: 061-236 7628

**ANALYSTS & PROGRAMMERS**  
The Plen Company Ltd  
124A High Road, London E11 1JG  
Tel: 01-544 4250  
(24hr answering)

**Recruitment Specialists**  
OCC Computer Personnel  
31 Hospital Street, Newcastle  
Tel: 0274 621266

**FOR FURTHER DETAILS OF THIS WEEKLY FEATURE CONTACT**  
**OWEN KELLY, 061-872 8861**

**FOR THE BEST PERMANENT AND CONTRACT JOBS IN THE NORTH OF ENGLAND**  
100 Victoria Road, Leeds LS1 7JH  
Tel: 011-255 7010 or 7011  
011-255 7014 (evening)

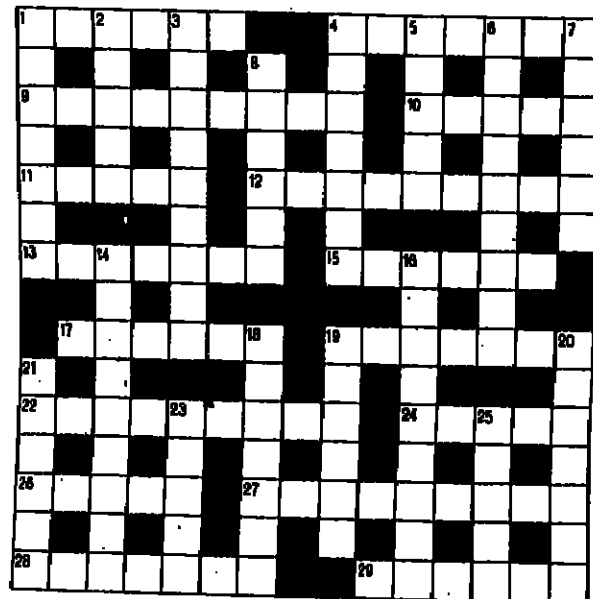


## CROSSWORD

## Prize Crossword No 15

Compiled by Alec Robins

A prize of £10 will be awarded for the first correct entry opened. The second and third solutions opened will receive £5 each. Entries to Crossword Competition, Computer Weekly, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS, by first post Friday, April 10. Please use a ballpoint pen to complete the crossword, and include a telephone number at which you can be reached during the daytime.



Name..... (Miss, Mrs, Ms, Mr)

Address.....

Telephone.....

I accept the rules and conditions of the Computer Weekly Crossword Competition.

Signed..... Date.....

## ACROSS

1. Withdraw to look round the Church with head of diocese (6)

4. Act, maybe, causing unofficial sort of strike (4-3)

9. A travelling hawk, a man taken round the East by a sailor (9)

10. Edible mollusc, yellow, found beside the sea at Boulogne (5)

11. He makes bundles, packing beer in the railways (5)

12. Somerset town's success with study about the worker (9)

13. Preparing to divert trains in times of crisis (7-6)

17. Muscular men filter in disguise among western crews (6-7)

22. Dislikes state with children around one (9)

24. Carousal contest bar to be withdrawn (5)

26. A bobbing, see, works in reverse (5)

27. One morbidly self-centred CO-1 marriage to reform (9)

28. Chests are tender in the Civil Service (7)

29. Story was the first containing inside information (6)

1. Old instrument having a bag only (7)

2. About to get something useful for an angler - a basket (5)

3. Going shooting, carrying English pistol, initially (9)

4. Labour with no right, and almost finish up roused (5-2)

5. A silly fellow's thrown up the sponge (5)

6. 7. Arrive at the wild North East and succeed royally (4,2,3,6)

8. Insect gets attention, landing on the judge (6)

14. Recited rapidly and staggered away (6,3)

16. Enrage one, if nature should be nasty (9)

18. Flute-players also disturbed rest (7)

19. A piece of foil is somewhat flexible (6)

20. Married, with records written up - like some wedding cake (7)

21. The pub's bill for white wine (6)

23. Find the answer to only about five (5)

25. Express love in the midst of sinful behaviour (5)

1. Each competitor may submit no more than one entry.

2. The competition is open to all readers of Computer Weekly.

3. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.

4. Winners will receive, within three months, the following prizes:

5. The decision of the editor on the interpretation of the rules and conditions and on all matters shall be final. No correspondence will be entered into.

6. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.

7. The competition is open to all readers of Computer Weekly.

8. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.

9. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.

10. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.

11. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.

12. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.

13. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.

14. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.

15. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.

16. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.

17. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.

18. The solution of each puzzle will normally be published in the issue three weeks after the puzzle has been published.

# Senior Systems Analyst

## £10,000 p.a. for the printing industry

### BEDFORDSHIRE

Our client is part of a UK multinational company who wish to expand their DP department due to an increase in their workload. They have, therefore, created an additional position in their systems department.

They are situated on the outskirts of Dunstable, next to beautiful countryside. They offer relocation where necessary, pleasant small and friendly working environment, very interesting development work and excellent promotional prospects.

With this position there is a high possibility of overseas travel, to the Far East and South America, for 2-8 weeks per year, installing systems.

If you feel you can match a majority of the following requirements our client would like to meet you.

- ★ Five years' solid systems experience.
- ★ Awareness of a variety of computer hardware.
- ★ Ability to see major projects through from initial investigation to implementation.
- ★ Printing and Production orientated systems.
- ★ Good customer/user contact.

The following would be an additional advantage:

- ★ Knowledge of Banking/Finance/Accounting.
- ★ IBM background.
- ★ Hardware/Software Company background.

Please contact TONY HATHERALL to arrange a prompt interview.

**Computer Search**  
**01-404 0152**

Norwich House, 13 Southampton Place, London WC1A 2AJ



## Job Opportunities In Australia



Computer Sciences of Australia is the leading supplier of computer services in Australia. The System Services Division provides consulting and systems development services to many major organisations. Because of increasing work demands, we need more well-qualified computer professionals for permanent positions in Sydney, Melbourne and Perth. Specifically, we are looking for people with a degree or other suitable qualifications in the following areas:-

- **PROJECT MANAGERS** - with several years experience in D.P. and a track record of successfully implementing complete systems.
- **DATA BASE SPECIALISTS** - experience in data base administration or design using IMS DB/DC, DL/I, IDS or ADABAS.
- **ANALYST/PROGRAMMERS** - sound background in COBOL and/or PL/I, using on-line and data base techniques. A minimum of 5 years experience is required.

## BENEFITS

- Good career opportunities
- Attractive salaries and a comprehensive benefits package
- Technical and management training
- Assistance with relocation

Interviews will be held during late April/early May in London and Nottingham. Please send full details to the address below:-

**CSA** Computer Sciences of Australia P/L,  
c/o Computer Sciences Corporation (U.K.),  
Heathcoat House, 20 Saville Row,  
London, W1X 1AE.

## Senior Systems Analysts/ Systems Analysts

Our client is part of one of the largest and most advanced international engineering groups in Britain, with large, modern manufacturing plants and extensive supporting facilities in the northwest of England. The company has full order books which include very large export contracts for the supply and support of its products in many parts of the world.

As a result of its increasing activities, the company is now seeking a number of Senior Systems Analysts/Systems Analysts to strengthen a team working on the development and improvement of engineering after-sales services. Applicants should have educational qualifications to HND/Degree standard and must have gained at least two years' working experience in an engineering/commercial environment.

The company operates an IBM 3031 computer running under MVS and supporting DL/I and CICS applications. Familiarity with this type of equipment and software would be an advantage, but proven analysis achievement is more important.

Successful candidates will be based at one of our client's major establishments, located in an attractive part of the northwest countryside but within easy access of major towns, motorways and rail services.

Please write with full details, listing separately any companies to whom your application should not be forwarded. All applications will be treated in confidence.

Mr. D. Bishop,  
Image in Industry Limited,  
2/3 Gough Square, Fleet Street, London EC4.

## WAYCOM LIMITED

### MINICOMPUTER DIVISION

## Sales Executive

(With Hardware Engineering Experience)

COMPETITIVE SALARY PLUS COMMISSION ON QUOTA

2-3 WEEKS HOLIDAY INCREASING TO 4 WEEKS

EXCELLENT WORKING CONDITIONS - GROUND FLOOR OPPORTUNITY

We are a young division of Waycom Limited, part of an established international electronics group, and are seeking a young person, probably aged between 25 and 35, to contribute to the development of our minicomputer division, which already has shown substantial growth in the first year.

If you are able to sell and have sufficient hardware engineering experience (e.g. DEC/DG/CA) to be able to package our minicomputer hardware with peripherals then this is an ideal opportunity to start at ground floor level to further develop sales and expand our business into the Midlands and North.

Interested in this exciting opportunity to expand your career?

Then contact:  
Yvonne Taylor, Personnel Department,  
Waycom Limited, Wokingham Road, Bracknell, Berkshire,  
Telephone: Bracknell (0344) 24571

## SALES BIT

## Pre-call preparation - 2

## Applying your product to the client's needs

LAST week I talked about personal organisation and the establishment of sales objectives in the context of pre-call preparation. But all the organisation and objectives in the world are of no value if they are not conditioned by an understanding of the client's problem and the capability of one own's product portfolio.

An essential ingredient of selling is the ability to identify a specific need or desire and then apply it to the most appropriate solution within one's product portfolio. This inevitably demands a clear understanding of the potential buyer's situation and the capabilities of one's own company, and calls for a lot of information on both sides of the question.

Client knowledge: Have I carried out sufficient research into this company's size, product and marketplace in order to have a real appreciation of the likely business opportunities which may arise in the context of the product I am selling?

In other words make sure you have the correct names of the company and the person you are visiting. Find out whether the company is part of a larger organisation and whether you already deal with any other related company.

Try to establish the company's financial situation - for example, how many employees does it have? Define the true nature of the company's business and assess the likely areas of requirement. Find out if you are calling on the ultimate decision-maker - what do you know about him?

There is no limit to the questions that might be asked in each of the four areas of consideration I have defined over the last two weeks. It is up to the individual salesperson to decide what is appropriate to the situation.

Only when this total process has been completed can the salesperson be completely ready to proceed with the sales-call itself.

Alan Williams

## COURSES

TWO courses being run by MicroAPL are oriented towards current and potential APL users. Advanced APL, to be held on May 12-13, covers file handling in detail, workspace communications, input/output concepts, for peripheral interfaces, advanced CBM facilities and major project architecture and security. Beginner's APL, on June 9-10, covers basic computer operation, main CBM facilities, APL concepts, elementary intrinsic functions and operators, user-defined functions, system commands and simple project building. Both courses will be at the company's offices in Victoria, London and the fee is £150 per delegate. Details from 19 Catherine Place, Victoria, London SW1E 6DX. Tel: 01-434 2687.

A GROWING interest in networks and the techniques of encryption, the main tools of data security, have led the National Physical Laboratory to organise a course, Security in Data Communication, to be held on May 21-22 at the NPL in Middlesex. It is intended for those in banking, commerce and industry who are engaged in processing confidential data through computer networks and communications.

COMPPOWER Training School is running several courses in April at its centre in Cannock, Staffordshire. Programming for Database DL/I is designed to enable Cobol programmers to write programs that will access a batch IMS database. This will be held from April 6-10 and costs £316. OS/VS Systems Operating is designed for junior operators and will provide them with a comprehensive understanding of console and peripheral operating, including technical details. This course takes place from April 28-30 and costs £205. Prices exclude VAT, but include accommodation and meals. Details of these and other courses from Comppower, Cannock, Staffs WS11 3HZ. Tel: Cannock 2511.

Further details and applications forms may be obtained from the School of Computer Systems, Room 201 & 202, Cranfield, Bedfordshire, MK23 7PL, or by telephone 0454 2687.

COMPPOWER Training School is running several courses in April at its centre in Cannock, Staffordshire.

Programming for Database DL/I is designed to enable Cobol programmers to write programs that will access a batch IMS database. This will be held from April 6-10 and costs £316. OS/VS Systems Operating is designed for junior operators and will provide them with a comprehensive understanding of console and peripheral operating, including technical details. This course takes place from April 28-30 and costs £205. Prices exclude VAT, but include accommodation and meals. Details of these and other courses from Comppower, Cannock, Staffs WS11 3HZ. Tel: Cannock 2511.

Further details and applications forms may be obtained from the School of Computer Systems, Room 201 & 202, Cranfield, Bedfordshire, MK23 7PL, or by telephone 0454 2687.

A GROWING interest in networks and the techniques of encryption, the main tools of data security, have led the National Physical Laboratory to organise a course, Security in Data Communication, to be held on May 21-22 at the NPL in Middlesex. It is intended for those in banking, commerce and industry who are engaged in processing confidential data through computer networks and communications.

COMPPOWER Training School is running several courses in April at its centre in Cannock, Staffordshire.

Programming for Database DL/I is designed to enable Cobol programmers to write programs that will access a batch IMS database. This will be held from April 6-10 and costs £316. OS/VS Systems Operating is designed for junior operators and will provide them with a comprehensive understanding of console and peripheral operating, including technical details. This course takes place from April 28-30 and costs £205. Prices exclude VAT, but include accommodation and meals. Details of these and other courses from Comppower, Cannock, Staffs WS11 3HZ. Tel: Cannock 2511.

Further details and applications forms may be obtained from the School of Computer Systems, Room 201 & 202, Cranfield, Bedfordshire, MK23 7PL, or by telephone 0454 2687.

A GROWING interest in networks and the techniques of encryption, the main tools of data security, have led the National Physical Laboratory to organise a course, Security in Data Communication, to be held on May 21-22 at the NPL in Middlesex. It is intended for those in banking, commerce and industry who are engaged in processing confidential data through computer networks and communications.

COMPPOWER Training School is running several courses in April at its centre in Cannock, Staffordshire.

Programming for Database DL/I is designed to enable Cobol programmers to write programs that will access a batch IMS database. This will be held from April 6-10 and costs £316. OS/VS Systems Operating is designed for junior operators and will provide them with a comprehensive understanding of console and peripheral operating, including technical details. This course takes place from April 28-30 and costs £205. Prices exclude VAT, but include accommodation and meals. Details of these and other courses from Comppower, Cannock, Staffs WS11 3HZ. Tel: Cannock 2511.

Further details and applications forms may be obtained from the School of Computer Systems, Room 201 & 202, Cranfield, Bedfordshire, MK23 7PL, or by telephone 0454 2687.

**SMR**  
Sales & Marketing Recruiters Ltd  
100 Victoria Road, London W14 7JH  
01-734 9776

**SALES EXECUTIVES**

Just in case you think we are merely the industry's leading supplier of career guidance for salesmen (to say nothing of sales training and market research), we are currently recruiting candidates for over 100 selling jobs within more than 30 computer companies.

If you are seeking a career rather than just a selling job, contact Alasdair Scott or Alan Williams - we have the experience to understand your needs.

Tel: 01-734 9776

**ARE YOU SELLING MICROCOMPUTERS?**

One of Britain's top 20 companies, already well-established computer-users in six multinational groups, seeks another two successful sales people for its information-systems subsidiary in Middlesex. The Company recently acquired sole UK marketing rights for a range of Z-80 based business microcomputers with full CP/M software capability as well as word processing and networking and communications options.

**SE and SW Territories Unrestricted Earnings**

These positions offer a car, BUPA, expenses paid, four weeks holiday, pension plan and product training. The Company is prepared to discuss assistance with relocation costs. Excellent technical sales support, continuous product development and substantial freedom of action also combine to maximise your success.

Interested applicants should write with full career details to:

Robert G. J. Wood,  
RISCO LIMITED,  
97 Portsmouth Road, Guildford, Surrey GU1 5DT.  
Tel: Guildford (0483) 94581

**COMPUTER SERVICES DEPARTMENT**

**PROJECT LEADER (09 576-810/731)**

An experienced Project Leader is required to take charge of a small team of Analysts/Programmers. A wide range of applications are to be developed and supported.

Applicants should be graduates or have relevant professional qualifications (B.A.S. or A.A.B.S.) with considerable experience of systems analysis and programming. A knowledge of IBM hardware and software would be an advantage. Preference will be given to candidates with previous experience of staff supervision and training.

Further details and applications forms may be obtained from the School of Computer Systems, Room 201 & 202, Cranfield, Bedfordshire, MK23 7PL, or by telephone 0454 2687.

**barough of sunderland**

**CONTRACT PERMANENT**

01-605 9671

**REXADON**

100 Victoria Road, London W14 7JH

FOR CLASSIFIED ADVERTISING USE

**DIRECT LINE**

**01-661 0121**

**Praser Williams**

Recruitment Training

100 Victoria Road, London W14 7JH

**Praser Williams**

Recruitment Training

100 Victoria Road, London W14 7JH